Sept. 16, 1930. A. HASSINK 1,775,957

ARCH SUPPORT

Filed July 29, 1929

Fig. 1.

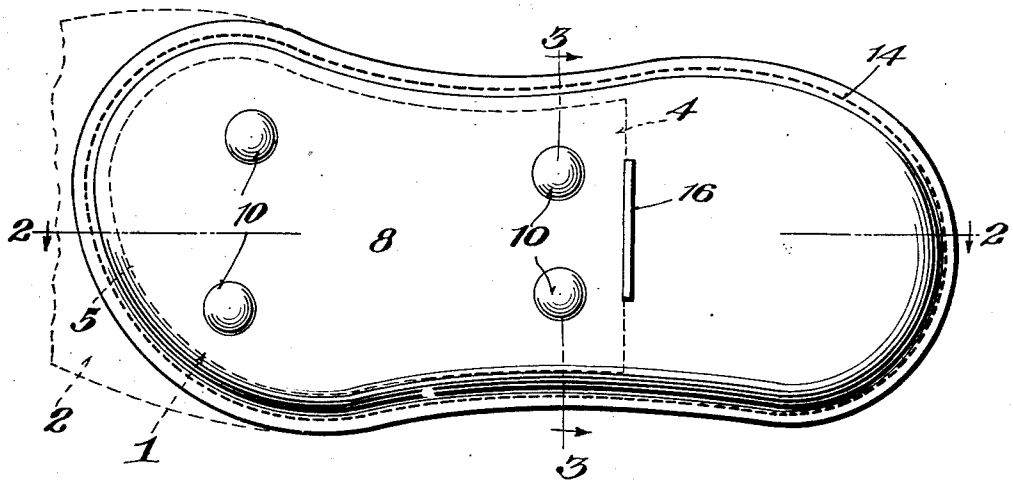


Fig. 2.

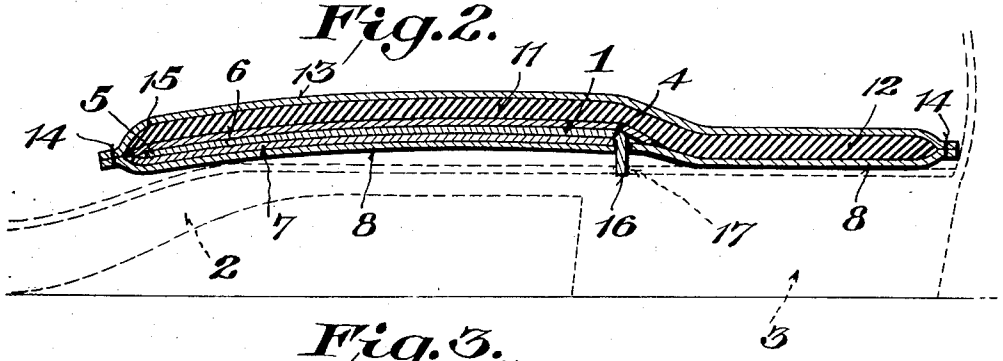
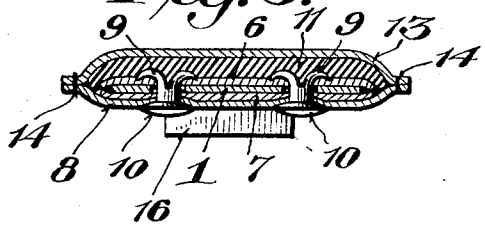


Fig. 3.



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Patented Sept. 16, 1930 1,775,957

UNITED STATES PATENT OFFICE

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ARCH SUPPORT

Application filed July 29, 1929. Serial No. 381,851.

My invention relates to arch supports and in particular to that type of instep arch support intended to be worn inside any shoe as an accessory thereto.

The invention has as its main object the provision of an arch support of the above type which will give long service without undue wear, or change in shape or adjustment, and without discomfort to the wearer or injury to the shoe.

Other objects and advantages of the invention will be apparent from a perusal of the following specification and the drawings accompanying the same.

In the drawings:—

Fig. 1 is a bottom plan view of the complete device;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is a transverse section on the line 3—3 of Fig. 1.

Referring to the drawings in detail, 1 is a rigid steel arch plate longitudinally curved and proportioned so that, when placed in a shoe 2 in which it is to be worn, it will extend from the front of the area over the heel 3 nearly to the ball of the foot of the wearer, its width increasing from the rear or heel end 4 toward the front end 5, so as to conform substantially to the general contour of the tread of the foot of the wearer.

The plate 1 is covered with top and bottom inside cover members 6 and 7, of tough flexible material such as leather, and these together with a bottom, overall casing or cover member 8 of similar material underlying the member 7, are mechanically secured to the metallic plate 1 as by split tubular rivets 9. The rivets 9 are distributed substantially evenly in relation to the area under the plate, and are provided with relatively large flat heads 10, adapted to serve as wear plates, preventing undue wear of the lower overall cover member 8.

Cemented to the upper surface of the top inside cover member 6 is a pad 11 of resilient material such as sponge rubber, cork or felt, preferably sponge rubber, extending slightly over the front and side edges of the plate and top cover member 6, and rearwardly of the plate member to form a heel pad 12, shaped to cover substantially the inside heel area of the shoe 2.

Over the pad 11 is a top overall cover member 13, of tough flexible material, coextensive with the bottom overall cover member 8; the two overall cover members being secured together as by stitching 14, around and beyond the edges of all the other members therebetween, to form an overall covering or casing. By forming the inner cover member 6 and 7 so as to overlap slightly the edges of the arch plate, and the pad to overlap slightly these cover members, with the overall cover members overlapping all, the finished article is given a beveled edge all around; the front end being given a more gradual bevel or taper by beveling the pad 11 at the front end as indicated at 15 in Fig. 2.

In order to hold the support firmly in proper position in the shoe, the arch plate 1 is provided at its rear or heel end with an anchor flange 16 extending transversely of the plate and downwardly therefrom into a complementary recess 17 formed in the forward part of the heel portion of the insole for this purpose. The recess 17 may be readily formed in an obvious manner in the shoe at the time of installing the arch support by means of a suitable countersink punch of substantially the form of the end of the anchor flange. This anchor flange, when embedded in the insole as shown in Fig. 2, not only holds the arch support as a whole against longitudinal and lateral displacement but, because of its extended connection with the shoe, holds the support firmly against any tendency to turn. Moreover, as the pad 11 is cemented to the top inner cover 6, which in turn is riveted to the arch plate 1, the pad is securely held against any tendency to float or shift around within the casing. The upper inner cover member 6, therefore, not only acts to shield the soft resilient material of the pad from being cut into by the edge of the arch plate, but acts also as a means for holding the pad and plate in fixed relation much more securely than that of cementing the resilient pad material directly to the stiff metallic arch plate, which latter would have a

tendency to loosen due to the usual difficulties of cementing to metal.

A feature of the present arch support structure to be especially noted is that the arch plate is made of sheet steel, of a gauge of such thickness and so tempered as to prevent it from bending appreciably under the weight of the wearer at any time, whereby the shank of the shoe is not only relieved of a portion of the weight of the wearer as where the arch plate or plates are of thin sheet, spring metal, but is relieved of the entire weight of the wearer through the rigidity of the arch plate; resilience being obtained substantially wholly from the pad.

Arch supports as commonly constructed extend under the ball of the foot and gradually diminish in thickness until at their forward end the thickness is practically nil. When so constructed, and especially when the device lacks efficient anchorage, it is liable to shift back and forth relatively to the sole of the foot, and this is believed to be the cause of formation of callosities on the ball of the foot.

The arch support constructed according to the present invention is of practically uniform thickness up to a point near to its forward edge; and inasmuch as the transverse flange provides effective anchorage against both longitudinal and lateral shifting of position relative to the wearer's foot, there is no liability of formation of callosities.

A further advantage of this construction is that it gives very effective support to the arch of the foot, thus relieving the ball of the foot and also the heel of a material part of the weight they would otherwise sustain. This results from the fact that the supporting plate is rigid, and that instead of extending under the ball of the foot and gradually diminishing in thickness, it forms a shoulder just behind the ball of the foot, and inasmuch as it is anchored at the rear of the arch, that part of the foot is upheld and effectively supported.

While I have thus herein shown and described one specific embodiment of my invention for the purpose of disclosure, it is to be understood that the invention is not limited to such specific embodiment, but contemplates all such modifications and variations thereof as fairly fall within the scope of the appended claims.

What is claimed is:—

1. An arch support comprising a rigid arch plate shaped to lie within a shoe upon the insole extending in length from in front of the heel area to near the ball of the foot of a wearer, and conforming in contour to the contour of that portion of the tread of the foot of a wearer under which it extends, a cover of flexible material for the plate mechanically fastened thereto at a plurality of points, a pad of resilient material cemented to the top surface of said cover coextensive with said cover to the front and side edges thereof and extending rearwardly of the heel end of the plate sufficiently to overlie the heel area of the shoe, and an overall casing of flexible material for said plate, cover and pad comprising top and bottom members joined together outside the outer edges of said plate, cover and pad, the heel end of the plate being bent down to form an elongated anchor flange, extending transversely of the plate and downwardly through the bottom member of the overall casing for engagement with a complementary transverse recess in the insole of the shoe in the front of the heel area.

2. An arch support comprising a rigid arch plate shaped so as to lie within a shoe with its length extending from the front of the heel area to near the ball of the foot of the wearer, and conforming in contour to the contour of that portion of the tread of the foot of a wearer under which it extends, an inner cover of flexible material for the plate, mechanically secured thereto and extending slightly over the edges thereof, a pad of resilient material cemented to the top surface of said cover and extending slightly over the front and side edges of the plate and cover, and a sufficient distance to the rear of the heel end of said plate to overlie the heel area of a shoe in which the support is placed, an outside casing of flexible material covering said plate, inner cover, and pad, and extending slightly over the edges of said plate, cover and pad, and an elongated anchor flange extending transversely along the heel end of the plate and downwardly through the said outside casing for engagement with a transverse depression in the sole of the shoe in the front of the heel area.

3. An arch support comprising a rigid arch plate arranged when placed in a shoe to extend longitudinally from the front end of the heel area near the area of the ball of the foot and having a width varying from rear to front substantially the same as that of the insole of the shoe in which it is placed but with slight clearance at the sides, a covering layer of flexible material for the plate mechanically secured thereto, a pad of resilient material cemented to the upper surface of said covering layer extending approximately to the front and side edges of said plate and covering layer and rearwardly beyond the rear edges to form a heel pad overlying the heel area of the shoe, the rear end of said plate being bent downwardly to form a transverse elongated flange arranged to be embedded in a complementary transverse recess in the shoe in the front of the heel area, said arch support being of substantially uniform thickness for the full length of the arch so as to form a shoulder at its forward edge.

4. An arch support comprising a rigid arch plate arranged to lie within a shoe over the insole and extend longitudinally from in front of the heel to near the ball of the foot of the wearer, said plate being curved longitudinally only and having its area relatively narrow at the end toward the heel and broadened at the end near the ball of the foot, a downwardly extending transverse flange carried by the arch plate at the heel end thereof arranged to be countersunk in the sole of a shoe in the front of the heel, top and bottom, inside covers of flexible material for said plate extending slightly over the front and side edges of the plate and rearwardly to the flange, an overall bottom cover extending slightly over the front and side edges of both the said inside covers and beyond the heel end of the plate over the heel area, rivets securing together the plate, the inside covers and the bottom overall cover, a pad of resilient material cemented to the upper face of said top inside cover slightly overlapping the front and side edges of the inside covers and extending beyond the heel end of the plate sufficiently to cover the heel area of the shoe in which the support is placed, and a top overall cover coextensive with the bottom overall cover and secured to said bottom overall cover beyond the edges of said plate, said rivets having heads extending below the lower surface of the bottom overall cover to protect the said bottom surface from wear.

In testimony whereof I have signed this specification.

ALBERT HASSINK.