Oct. 14, 1952 J. A. AMICO 2,613,456

ARCH SUPPORT AND METATARSAL PAD

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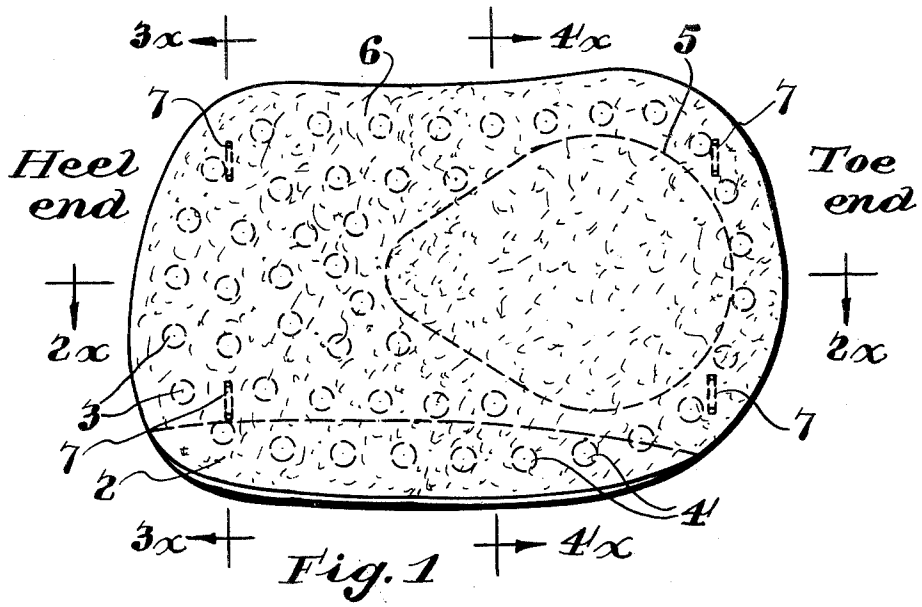


Fig. 1

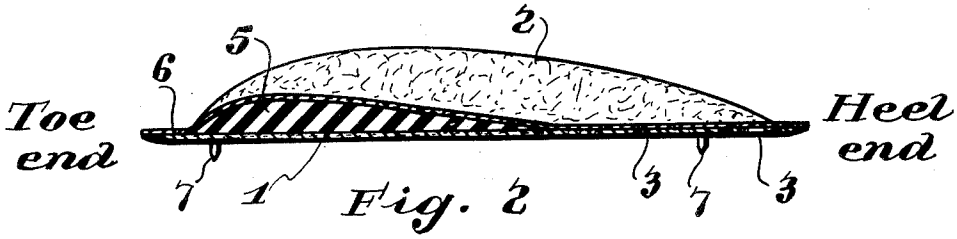


Fig. 2

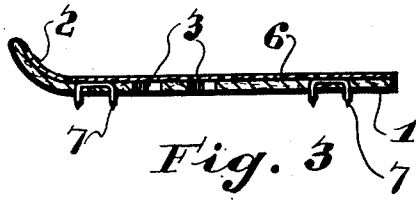


Fig. 3



Fig. 4

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ARCH SUPPORT AND METATARSAL PAD

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3 Claims. (Cl. 36—71)

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The human foot has five metatarsal bones, which bones are long and narrow and are numbered from one to five and the first metatarsal bone is in line with the big toe of the foot. Some or all of these metatarsal bones get out of place and get to an abnormal position in the foot and need special treatment to get them back to and support them in normal position. This most frequently occurs in connection with the second, third and fourth metatarsal bones and less frequently with the first metatarsal bone and still less frequently with the fifth metatarsal bone.

Shoes generally are made according to certain standards which is determined by the shape of the last one which the shoe is made. Feet that have the abnormal features must conform themselves to the standard shoes that are worn and this frequently causes discomfort in the abnormal foot wearing a standard shoe.

Heretofore arch supports have been made that contain more or less metal and which are used for the purpose of forcing the misplaced metatarsal bones back to position.

I have invented a support for the metatarsal bones of the foot that contains no metal.

It comprises a base plate which is made of sole leather of about four irons in thickness, it being understood that the term "iron" in the leather trade means a thickness of 1/48" and "four irons" means a thickness of about 1/12".

The contour of this base plate is substantially the same as the mid portion of the ordinary leather insole that is used in shoes as a standard part thereof. On this base plate is placed a wing plate, which is narrow and is placed on top of that portion of the base plate that is bent up under the inside of the foot. That is to say, in the support for the right foot, the wing plate is placed on the left hand side of the base plate and in the support for the left foot the wing plate is placed on the right hand side of the base plate. Because the wing plate is narrow and is placed in line with the big toe the supporting part of it is confined to the first metatarsal bone. The thickness of the wing plate is substantially the same as the thickness of the base plate and is intended to raise up the inner portion of the support somewhat more than it is raised up by conforming to that part of the shoe with which it makes contact.

Both the wing plate and the base plate are perforated with a large number of perforations which perforations are about 1/16" in diameter. On the base plate is placed a metatarsal pad made preferably of rubber that is 40% elastic as

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that term is used in the rubber trade. This pad is wide and rounded at one end and is somewhat V-shaped at the other end. This metatarsal pad may or may not slightly overlap the outer edge of the wing plate. This metatarsal pad in the central part has a thickness of about 1/4" and tapers off in thickness somewhat toward the outer edges or rim thereof.

This rubber metatarsal pad is made preferably without perforations, but the base plate and the wing plate are perforated with frequent perforations outside of the margin of the metatarsal pad, usually forty or more perforations being used for this purpose in the base plate. These perforations are preferably of about 1/16" in diameter.

On top of the base plate and the wing plate and the metatarsal pad is placed a skin coating preferably of very thin sole leather.

The object of this invention is to give sufficient support to all of the five tarsal bones, the support locally being dependent on the thickness of the support under each bone and in addition thereto the elastic pad and the base with the frequent holes therein cause a suction and a massaging effect on the arch of the foot by the alternate pressure and removing of pressure on the pad by the foot as the party walks step by step.

Another object of the invention is to facilitate the placing of the support in the right position under the foot, so that it will give support in the place where the support is needed.

In the drawings:

Fig. 1 is a top plan view of the support for a shoe for the left foot, the heel end of the support being shown at the left in Fig. 1.

Fig. 2 is a longitudinal section through the support, the section being taken on the line 2x, 2x of Fig. 1, the parts being shown reversed from right to left.

Fig. 3 is a transverse section through the support, the section being taken on the line 3x, 3x of Fig. 1.

Fig. 4 is a transverse section through the support, the section being taken on the line 4x, 4x of Fig. 1.

In the drawings, like reference numerals indicate like parts.

In the drawings, reference numeral 1 indicates the base plate which preferably has a thickness of about 1/12". The inner edge of the base plate is turned up when placed in the shoe to form a wing 2, which also has a thickness of about 1/12" and is long and narrow, the width of it being shown in the area above the dotted line

in Fig. 1. This wing is somewhat in line with the big toe of the foot. **3, 3** indicates the perforations in the base plate and **4, 4** indicates the perforations in the wing. **5** indicates the metatarsal support which is preferably made of rubber having an elasticity of about 40%, which metatarsal support may partially overlap the wing **2** or may not overlap it at all. This metatarsal support is intended to support the second, third and fourth metatarsal bones, the first metatarsal bone being supported by the wing.

6 indicates the skin coating that is placed over the top of the assembly. This skin coating is impregnated with ground clay, which makes it absorbent as a blotter. The leather coating also protects the stocking. The rubber pad **5** is soft enough so that it will compress to some extent under the pressure of the foot with every step and will relax again every time the foot is lifted, and this in turn causes an intermittent suction in the instep, that is it causes a suction and a massage with every step that the foot takes. On the bottom of the assembly is placed one or more coatings of rubber cement, which will give it a tacky surface that will hold it in place and prevent it from sliding on the insole of the shoe.

Embedded in the base plate and possibly in the wing plate as well may also be provided the metal points **7, 7** that project downward and can engage with the insole of the shoe to hold the support in place; although it has been found by experience that the tacky surface on the bottom of the support is sufficient for this purpose.

Fig. 1 shows the arch support for the left hand shoe and the support for the right hand shoe will be the same as shown in Fig. 1 if it is symmetrically reversed.

It will be understood that that end of the arch support that is marked "heel end" in Fig. 1 is placed at the heel end of the shoe or as near to the heel end of the shoe as circumstances will permit. This will hold the pad **5** in position under the metatarsal bones of the foot.

This application is a continuation in part of my copending application Serial No. 438, filed January 3, 1948.

I claim:

1. In an arch support, and a metatarsal pad the combination of a base plate rounded at both ends, having a suitable thickness, the inner edge of said base plate being turned up to form a wing, an elastic metatarsal support placed at and upon the forward end of the base plate adjacent to the wing, perforations in said base plate rearwardly of said support and in said wing, a substantially imperforate skin coating comprising a thin layer of clay-impregnated absorbent sole leather placed over the assembly so formed and one or more coatings of rubber cement placed on the bottom of the base plate.

2. In an arch support, and a metatarsal pad the combination of a base plate rounded at both ends, having a suitable thickness, the inner edge of said base plate being turned up to form a wing, an elastic metatarsal support placed at and upon the forward end of the base plate adjacent to the wing, perforations in said base plate rearwardly of said support and in said wing, a substantially imperforate skin coating comprising a thin layer of clay-impregnated absorbent sole leather placed over the assembly so formed and one or more coatings of rubber cement placed on the bottom of the base plate metal points projecting downwardly through the base plate only and adapted to engage in the insole of the shoe.

3. In an arch support and a metatarsal pad, the combination of a leather base plate rounded at both ends, having a suitable thickness, the inner edge of said base plate being turned up to form a wing, an elastic metatarsal support placed at and upon the forward end of the base plate adjacent to the wing, perforations in said base plate rearwardly of said support, and a substantially imperforate skin coating comprising a thin layer of clay-impregnated absorbent sole leather placed over the assembly so formed, and covering said support and perforations, said base plate and skin providing substantially uniform thickness throughout except as modified by said elastic support.

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