Nov. 25, 1924. 1,517,170

L. ROSENTHAL

FOOT SUPPORTING PAD FOR SHOES

Filed Feb. 20, 1924

Fig. 1

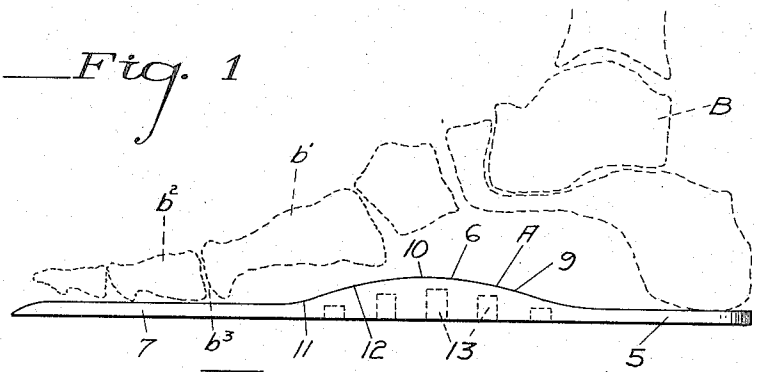


Fig. 2

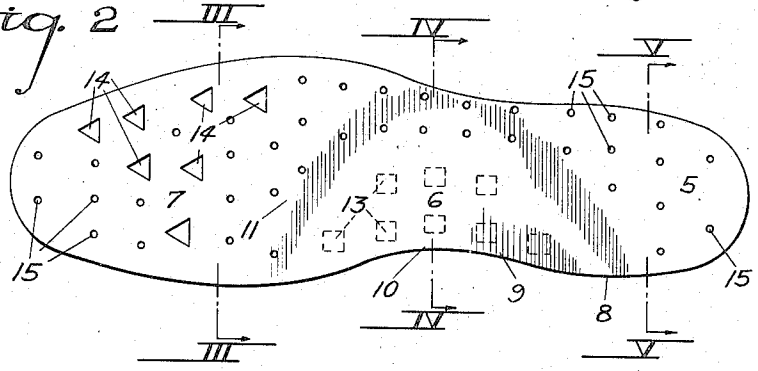


Fig. 3

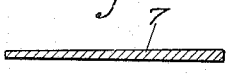


Fig. 4

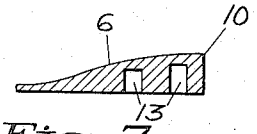


Fig. 5

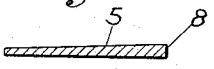


Fig. 7

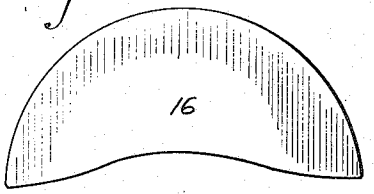
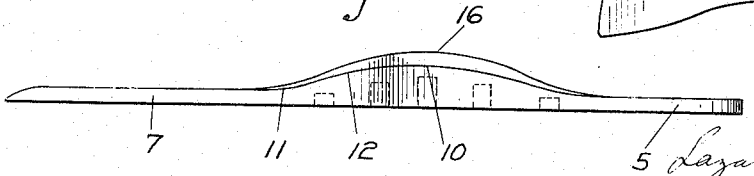


Fig. 6



INVENTOR

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UNITED STATES PATENT OFFICE.

LAZARUS ROSENTHAL, OF PITTSBURGH, PENNSYLVANIA.

FOOT-SUPPORTING PAD FOR SHOES.

Application filed February 20, 1924. Serial No. 694,157.

To all whom it may concern:

Be it known that I, LAZARUS ROSENTHAL, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Foot-Supporting Pads for Shoes, of which the following is a specification.

This invention is for a foot supporting pad for shoes, which is in the nature of an arch support but which is extended to be co-extensive with the area of the foot.

During the act of walking, the shape or contour of the foot is constantly changing, distributing the maximum load from one part of the foot to another. Due to the non-yielding character of the soles of shoes, and to the fact that a large percentage of shoes do not properly confine the foot, foot troubles, due to broken arches or strained leg muscles, are liable to and frequently do develop.

It is a common practice to attempt to prevent such trouble, or to correct or alleviate the trouble by supporting the main or horizontal arch of the foot, either by resilient metal or rubber arch supports. Such devices, while often satisfactory, more frequently do not give the desired results, due to the fact that they support only the horizontal arch, without providing a natural support for adjacent or related parts of the foot, and probably place additional strain on such adjacent or related parts.

It has also been proposed to prevent or alleviate such troubles by fitting into a shoe a device co-extensive with the area of the foot, primarily designed to support the arch and yet provide a cushion for the entire foot. Such devices, as heretofore designed, however, do not give the desired support and freedom of movement to those parts of the foot adjacent the main arch.

Forming the last bones in the main arch of the foot and extending forwardly from the main arch, are the anterior or metatarsal bones, which are in themselves arched, and form what is often termed the anterior or metatarsal arch of the foot. These bones, in turn, terminate at the first series of toe bones, technically known as the phalanges, the joint being termed metatarsal-phalangeal joint.

In walking, there should be considerable movement of the anterior bones and of the phalanges, but, due to the non-yielding character of the surface on which they rest in the shoe, this movement is not as free as it should be, and the bones are not cushioned as much as necessary. This not only causes the formation of calluses on the feet, but results in fatigue that weakens the foot and the arch, and frequently causes pain in the legs, such discomfort even being noticeable when the main arch itself is well supported.

If the weight of a person wearing shoes is thrown more to the outside of the foot, the various bones of the foot may move to better advantage and relieve, to some extent, the fatigue and strain caused by walking. If this can be done while supporting the arch, and allowing freedom of movement to the metatarsal-phalangeal joint, foot troubles, due to so-called broken arches and fatigue of muscles, can be prevented, and such conditions alleviated in persons already so troubled.

To this end, the present invention has for its principal object to provide an arch support of rubber or other resilient material adapted to cover the bottom of the foot and designed to support the arch, support the anterior bones, and cushion the foot at the metatarsal phalangeal joint to a greater extent than any other part of the foot, and which is designed to throw the weight on the foot more to the outside. Covering the whole foot, as it does, the device cushions the entire foot, and gives support and freedom of action to those parts of the foot where support and where freedom of action is most required.

The invention may be readily understood by reference to the accompanying drawing, in which:

Fig. 1 represents a side elevation of the support, showing the schematic outline of the skeleton of the foot in dotted lines;

Fig. 2 is a plan view of the support;

Figs. 3, 4 and 5 are transverse sections on lines III—III, IV—IV, and V—V of Fig. 3, respectively;

Fig. 6 is a view similar to Fig. 1, showing a modification; and

Fig. 7 is a side top view of the detail part comprising the modification.

In the drawing, A is the support, and the outline of the skeleton of the foot is indicated at B. Bones marked b' are the anterior or metatarsal bones forming the

anterior arch, the phalanges are designated at b^2, and the phalangeal metatarsal joint is at b^3.

The support A comprises a resilient pad made of soft rubber or other suitable material, of a size large enough to cover the bottom of the foot of the wearer and cover the bottom of the inside of the shoe. The pad has a heel portion 5, an intermediate arch portion 6, and a forward extension 7.

The heel portion 5 is generally flat, but is slightly thicker at the inside edge 8 of the pad, the pad illustrated being for the right foot. The forward part of the heel portion merges gradually into the arch supporting portion 6, which is relatively high on the inside, as indicated at 9, but whose outer edge has substantially the same thickness as the outside of the heel, as may be seen by comparison of Figs. 4 and 5. The highest part of the arch is indicated at 10, and from this point it slopes downwardly in a forward direction, its contour being slightly convexed until it merges into the forward extension 7 at point 11. This point is well in advance of the joint at the rear of the metatarsal bones, so that the convexed surface at 12 gives support to the anterior arch of the foot. Pockets 13 or similar recesses may be formed in the under side of the arch to lend resiliency thereto and produce a cushioning effect.

The forward extension 7 is substantially flat, but the inside portion throughout its length is thicker than the outside portion. Inasmuch, therefore, as the entire inner edge is thicker than the outer edge, the effect of the pad is to put more of the wearer's weight on the outside of his foot, distributing more evenly the pressure on the different parts of the foot, relieving the load on the inner side of the foot, and allowing a more free and natural action of the foot in walking.

In the front extension are a plurality of relatively large holes 14 which are preferably triangular, but which may be of any desired shape. The openings are so arranged that the greatest number of them are disposed along the outer edge of the pad, and decrease in number toward the inner edge. That is, the openings are arranged in a triangle, with the greatest number along the outer edge of the pad. These holes increase the cushioning effect of the pad, and give increased resilience to that area of the pad which is in the vicinity of the phalanges and phalangeal metatarsal joint, particularly along the outside of the foot where, when walking, with the weight thrown to the outside of the foot, the changes in the shape of the foot are most marked. These holes provide a clearance for the movement of certain bones which otherwise are forced slightly up out of place, and distribute the pressure more evenly over the front part of the foot, at the same time breaking the impact of the body weight by giving a cushioned support.

Substantially the entire area of the pad, or such portion thereof as may be desired, may be perforated by smaller perforations 15 provided for ventilation and circulation of air.

Inasmuch as it will frequently happen that the main arch support 6 will not be sufficiently high, I may provide an auxiliary pad adapted to fit on top of the arch support 6, as indicated in Figs. 6 and 7. In these views, 16 designates an auxiliary piece which may be secured or cemented onto the top of the main support. This member is thicker on the inside than on the outside, and has tapered ends so as to fit comfortably to the foot.

I claim as my invention:

1. A pad for shoes comprising a resiliently compressible body adapted to cover the entire foot having a relatively high central arch portion and relatively thin heel and toe portions at the back and front of the arch respectively, the area of said toe portion adapted to support the outer part of the wearer's foot adjacent the phalangeal metatarsal joint being more resilient than the remaining area of the pad.

2. A pad for shoes comprising a resiliently compressible body adapted to cover the entire foot having a relatively high central arch portion and relatively thin heel and toe portions at the back and front of the arch respectively, the area of said toe portion adapted to support the outer part of the wearer's foot adjacent the phalangeal metatarsal joint having a plurality of relatively large apertures therein arranged to increase the resiliency of the pad beyond that of the other portions of the pad and provide greater freedom for the bones of the foot in that portion of the foot.

3. A pad for shoes comprising a resiliently compressible body adapted to cover the entire foot having a relatively high central arch portion and relatively thin heel and toe portions at the back and front of the arch respectively, the area of said toe portion adapted to support the outer part of the wearer's foot adjacent the phalangeal metatarsal joint having a plurality of relatively large apertures therein arranged to increase the resiliency of the pad beyond that of the other portions of the pad and provide greater freedom of movement for the bones of the foot in that portion of the foot, said pad being higher throughout its length along the inner side thereof whereby it tends to throw more of the wearer's weight to the outside of his foot.

4. A pad for shoes comprising a relatively thin resilient and compressible body

adapted to cover substantially the entire area of the wearer's foot, and being thickest throughout its length at its inner side, said body having a relatively long high arch supporting portion intermediate its ends and extending forwardly sufficiently far to also support the anterior arch of the wearer's foot, said pad having a plurality of cushioning apertures therethrough located in the forward part of the body forwardly of the arch.

5. A pad for shoes comprising a relatively thin resilient and compressible body adapted to cover substantially the entire area of the wearer's foot, and being thickest throughout its length at its inner side, said body having a relatively long high arch supporting portion intermediate its ends and extending forwardly sufficiently far to also support the anterior arch of the wearer's foot, said pad having a plurality of cushioning apertures therethrough located in the forward part of the body forwardly of the arch, said apertures being disposed in triangular arrangement with the greatest number along the outer edge of the pad.

In testimony whereof I affix my signature.

LAZARUS ROSENTHAL.