G. W. McSWEENEY.

ARCH SUPPORTER.

APPLICATION FILED APR. 20, 1917. RENEWED SEPT. 5, 1918.

1,281,987. Patented Oct. 15, 1918.

Fig. 1.

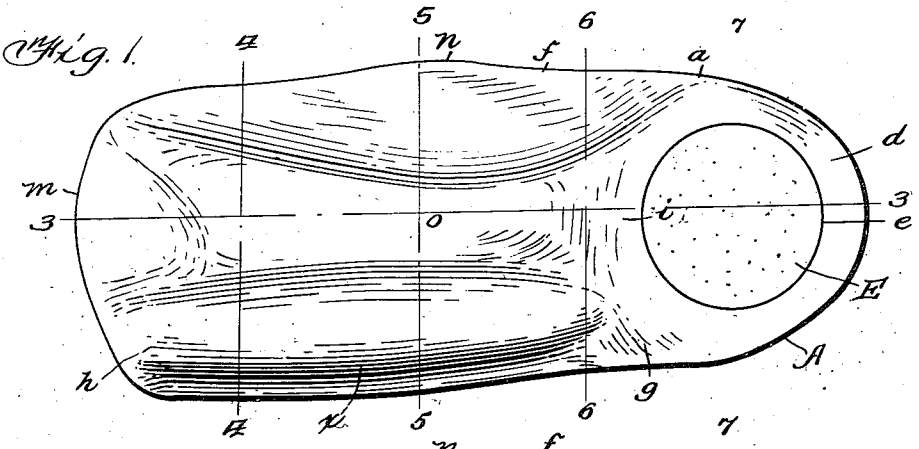


Fig. 2.

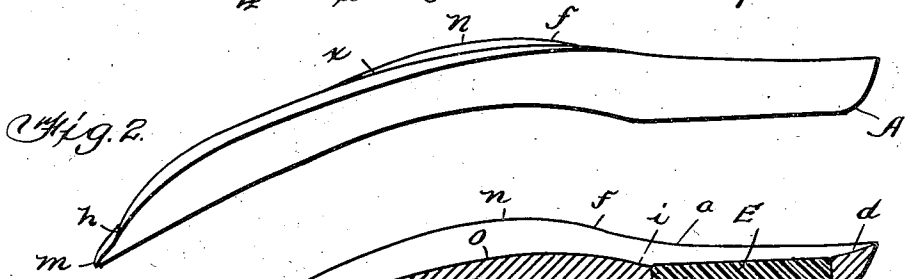


Fig. 3.

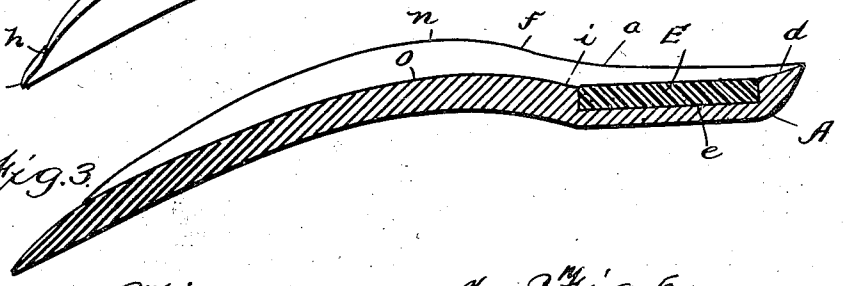


Fig. 4.

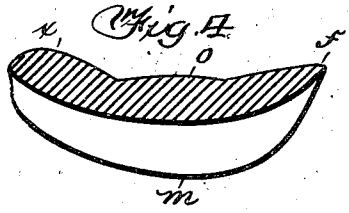


Fig. 6.

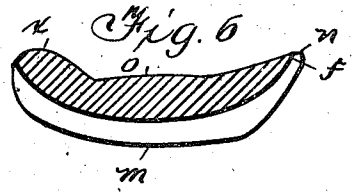


Fig. 5.

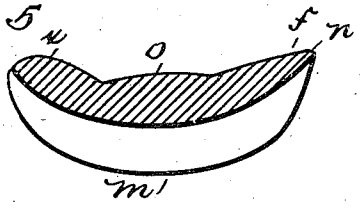
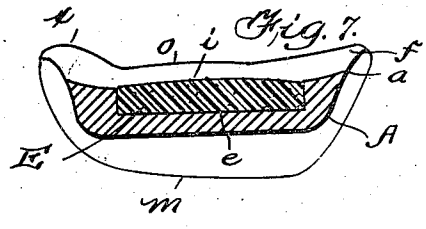


Fig. 7.



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ARCH-SUPPORTER.

1,281,987. Specification of Letters Patent. Patented Oct. 15, 1918.

Application filed April 20, 1917, Serial No. 163,494. Renewed September 5, 1918. Serial No. 252,791.

To all whom it may concern:

Be it known that I, GEORGE W. McSWEENEY, a citizen of the United States, residing at Bronx, in the county of Bronx and State of New York, have invented certain new and useful Improvements in Arch-Supporters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to arch supporters, and more particularly to that type placed in shoes to elevate certain portions of the foot above the surface of the insole of the shoe.

The objects of this invention are to provide a device which may readily be placed in a shoe and which is so constructed that it will restore the arch of the foot to its normal position and prevent subsequent collapse of the arch, also, to provide a soft springy cushion heel directly in contact with the under portion of the heel, just as nature provided it should be.

Other objects of the invention are to prevent the dropping of the foot inwardly, the flattening of the arch, the abduction of the front of the foot, to prevent the astragulus from moving forward and inward on the os calcis causing pronation and the rolling inward of the foot, and a lowering of the front of the os calcis. It prevents the heel from inclining outwardly and the tendo achillis from curving upward and inward causing it to rise vertically, providing a means which will give the foot a normal support and help keep the proper body balance.

A further object of the invention is to provide a device which will help prevent the tired feeling, the pain in the foot, heel, sole, base of toe, and calf of the leg, common to those suffering with flat feet. It helps to prevent the relaxation of the muscles whose tendons cross the sole of the foot. The progress of coxa vara (bow legs) and coxa valga (knock knees) is impeded to a marked degree, and such cases when due to flat feet, are often materially benefited. The device will prevent the unnecessary stretching of the lateral ligaments of the knee joint in cases of coxa vara and coxa valga.

Another object of this invention is to provide a device which will help to do away with the jolting and traumatism of the bones and joints of the lower extremities and spinal column while walking, not alone to those afflicted with flat feet, but also, to those whose feet are in normal condition, by placing a soft comfortable rubber cushion directly beneath the os calcis. Said cushion will insure comfort and ease in standing, walking, dancing or running, and will entirely remedy any disagreeableness experienced through walking, standing or general use of the feet. It also provides means to prevent the formation of callus or blisters on the sole or heel of the foot. With the use of the cushion heel, one may dispense with the rubber heel attached to the shoe, which invariably has a portion of hard leather intervening, for a soft, light springy cushion in direct contact with the heel itself.

A further object of this device is to provide a hard rubber supporter which is perfectly sanitary, light in weight, water-proof, indestructible by wear, easily cleansed, and will not retain the heat produced by the body temperature. It will not cause the feet to perspire and will not retain any perspiration or odor caused by the same, which is so common to those suffering with flat feet.

With these and other objects in view, this invention will be hereinafter more particularly described with reference to the accompanying drawings, which form a part of this application, and will then be pointed out in the appended claims.

Referring to the drawings;

Figure 1 is a plan view of one form of the device,

Fig. 2 is a side elevation thereof,

Fig. 3 is a longitudinal sectional view on the line 3—3 of Fig. 1,

Fig. 4 is a transverse sectional view as on the line 4—4 of Fig. 1,

Fig. 5 is a similar view on line 5—5 of Fig. 1,

Fig. 6 is a similar view as on the line 6—6 of Fig. 1, and,

Fig. 7 is a similar view as on the line 7—7 of Fig. 1.

The supporter as set forth in this specification will preferably be made of hard rubber, colored as desired, and it will conform generally in its marginal shape to that of the ordinary shoe, or to the foot of the person in connection with which, the device is to be used. The device comprises a body (A) which has a concaved heel portion as at (*d*) to receive the heel of a user, and to give the heel a certain amount of firmness so that it will not slip forward, backward, or to the side, giving a support to the ankle joint and preventing it from twisting or turning on itself.

In the center of the concavity (*d*) is a circular recess (*e*), in which, a soft rubber pad or cushion (E) is inserted, which serves as a cushion for the os calcis.

The device has an elevated part (*f*) on the inner side, which curves gradually from the heel portion (*a*) to the toe portion (*m*) so as to be substantially higher at (*n*) than at any other portion of the part (*f*), and this elevation (*f*) extends from part (*a*) for the heel bone, to a point approximately adjacent to where the distal end of the metatarsal bone would be located.

A raised part or longitudinal ridge (*x*) is formed near the outer edge, opposite to the part (*f*), and like the part (*f*), is higher near the outer edge than at the inner part or substantially midway of said device. The part (*x*) is somewhat lower than the part (*f*) and this outside support extends from the heel portion (*g*) of the device, forwardly beneath the shafts of the fourth and fifth metatarsal bones to a point approximately adjacent to (*h*) where the distal end of said bones would be located. This part (*x*) supports the outer arch of the foot, the fourth and fifth metatarsal bones and supports the ligaments and tendons of the muscles in the region of the outer malleolus. It prevents the foot from sliding outward and downward, and acts as a greater support for the ankle joint, thereby preventing twisting and turning. It also prevents unnecessary spreading of the foot, and holds the metatarsal bones closer together. By acting as a support to the outer side of the foot, this part causes the abduction of the foot so common to flat feet, to disappear.

At the anterior border of the device is an oblong elevation (*o*), which is located directly underneath the heads of the inner metatarsal bones, extending from the inner border of the device (*f*) to the inner border of the part (*x*). This part (*o*) in conjunction with the anterior portion of part (*x*) acts as a support for the heads of the metatarsal bones and allows a liberal amount of motion to the phalanges. It also helps to distribute the pressure of the weight of the body equally on the foot.

The inner flange (*f*) already described, supports the inner metatarsal bones, holding in place, the entire inner arch, preventing the dropping inward of the foot, the flattening of the arch, and the marked raising of the terminal phalanx of the great toe. It also strengthens the inner portion of the ankle point and in conjunction with the part (*x*), prevents the twisting or turning of the ankle joint itself.

The arched portion (*o*) of the device extends from the heel portion (*i*) forward to the line 4—4. In conjunction with the heel portion (*i*) and the portion at the exterior part of the device, this portion (*o*) helps to equally distribute the pressure of the weight of the body on the foot.

It is apparent from the foregoing that this device has been developed in view of the particular requirements of feet with fallen arches, and also, with full consideration of the joints of the foot bones, so that each joint, subject to distortion is provided for. It is also evident that it will be made in different sizes and for both the right and left feet, having certain characteristics which may be accentuated in individual cases.

Having thus described this invention, I claim:

1. In an arch supporter, a hard body portion having a concaved heel receiving portion and an arched shank extending forwardly therefrom, and being arched through that portion of its length underlying a metatarsal bone.

2. In an arch supporter, a hard body portion having a concaved heel receiving portion, and an arched trough-like shank extending forwardly therefrom, and having a continuous ridge therealong spaced from the inner edge of said body portion.

3. In an arch supporter, a hard body portion, a concaved heel receiving portion, an arched shank extending forwardly therefrom having elevated edges, and an elevated central portion at the forward end and the elevated outer edge being formed by a continuous ridge having its crest inwardly of the extreme edge.

4. In an arch supporter, a hard body por-

tion having a concaved heel receiving portion, an arched extension therefrom, having the arch terminate near the forward end of the extension, and elevated edges along said arched shank, forming a trough to properly position the foot of the user, the outer elevated edge comprising a continuous broad ridge having its crest disposed inwardly of the edge to underlie and support certain of the metatarsal bones of the foot.

5. In an arch supporter of the class described, a hard body portion removably carried in a shoe, said hard body portion having a concaved heel receiving portion and an arched shank extending forwardly therefrom, said concave heel receiving portion having a yieldable cushion mounted therein to cushion shocks transmitted through the heel of the shoe.

In testimony whereof I affix my signature.

GEORGE W. McSWEENEY.