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A. EHRENFRIED

1,809,405

SHOE HEEL

Filed May 3, 1929

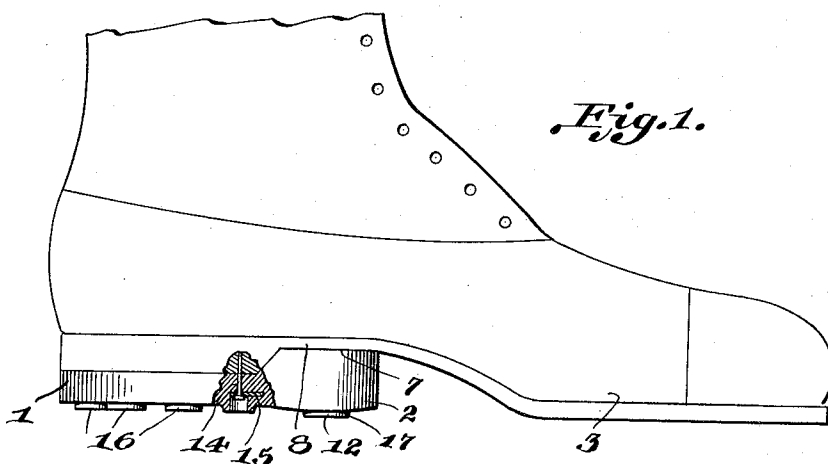


Fig. 1.

Fig. 2.

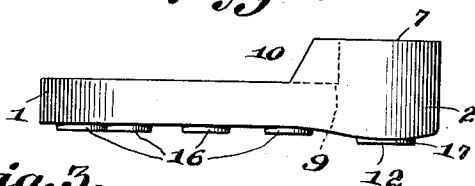


Fig. 3.

Fig. 4.

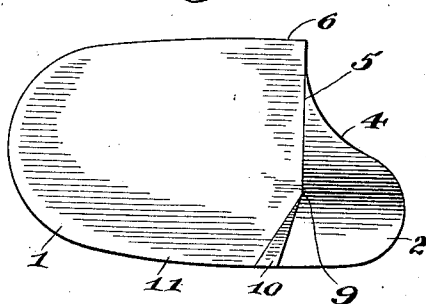
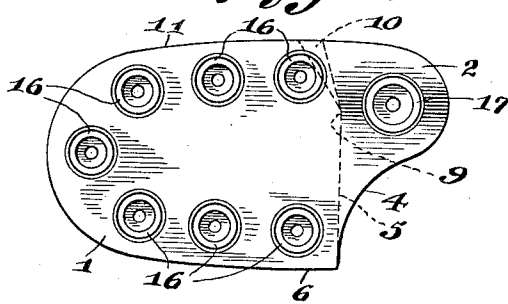
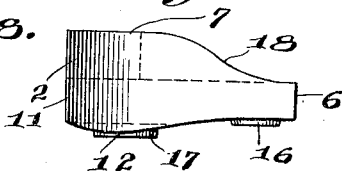
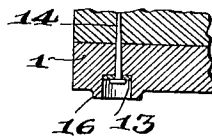


Fig. 6.

Fig. 5.

Fig. 7. Fig. 8.



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UNITED STATES PATENT OFFICE

ALBERT EHRENFRIED, OF BOSTON, MASSACHUSETTS

SHOE HEEL

Application filed May 3, 1929. Serial No. 360,087.

This invention relates to shoe heels and more particularly to shoe heels which tend to correct foot evils or prevent them from arising as will be hereinafter more clearly apparent.

Many prior devices are known which are designed to correct foot evils or to supply deficiencies of structure or form to an inadequate or incorrect shoe or an incompetent or abnormal foot. The prior devices have been found insufficient to accomplish the objects of the support invented by the applicant.

The device of the present invention not only overcomes the disadvantages of prior devices but offers additional manifold advantages peculiar to its construction.

Among the objects and advantages of the present invention are the relief of foot-strain; the overcoming pain or discomfort in the foot and ankles due to pronation of the foot, weakness or laxity of the ligaments or tendons of the foot and ankle, or sprain or injury thereof; the prevention of flat-foot and the relief of symptoms in the foot or leg caused thereby; the encouragement of proper walking in children and youths so as to prevent foot disabilities and secondary static disturbances in later years; the compensation for or overcoming of defects in design or construction of shoes tending to give rise to foot strain, pronation, flat-foot and associated or related disabilities; the replacement of flat-foot plates, felt, rubber, leather, and other in-step pads, tilted shoes, extended (Thomas or orthopedic) heels, extended and reinforced counters, steel shanks, elastic girdle supports and other devices of similar or like nature and purpose; the exercise of corrective or supporting action in affections involving a distortion of the foot or interference with locomotion, such as congenital flat-foot, equino-valgus and certain types of paralysis, and, when reversed on the shoe, equinovarus, of congenital or paralytic origin; and the support of the foot in convalescents, in rheumatics, after removal of leg casts or other apparatus, in the weak and aged, and in those whose occupation demands much standing, walking or carrying.

A preferred embodiment of my invention

is found in the accompanying drawings wherein

Figure 1 illustrates the device in position with a portion broken away to show a form of securing means;

Figure 2 is a side elevational view of the device per se;

Figure 3 is a plan view of the device;

Figure 4 is a bottom view thereof;

Figure 5 is a view looking from the right of Figure 2 toward the rear;

Figure 6 is a fragmentary section through one of the protuberances and attaching means; and

Figures 7 and 8 are concentric or eccentric washers used.

Similar numerals refer to similar parts throughout the several views.

The invention, which may be applied or adapted to men's, women's, or children's shoes or to shoes of special design or use with substantially equal facility, comprehends the provision of a forward raised portion 2 preferably integral with a heel 1 and designed to give resilient support to the arch of the foot in standing or walking. Figure 1 shows the relation of the device to the heel and arch of a shoe 3.

The heel 1 is extended forwardly for substantially one-third of its length along its inner edge, its outline being brought back gradually at 4 so that it reaches the normal forward edge 5 of the heel 1 somewhat internally of its outer border 6, in such a manner that its greatest projection is in front of the inner portion of the heel and therefore substantially under the navicular or scaphoid bone of the tarsus.

The portion 2 which extends beyond the forward edge 5 of the heel 1 is made thicker and is so constructed that for a width of about one-half of the heel its upper surface 7 comes in contact with the undersurface of shank 8 of shoe 3, from which the thickness gradually reduces as at 18 until it reaches the normal somewhat internally to the outer edge 6 of heel 1. (Fig. 5).

The line of the vertical posterior wall of the forward elevated portion 2 may be broken at a point 9 from about one-quarter to one-half

the width of the heel from its inner edge in such a way that it slopes obliquely backwardly at 10. This portion of the wall may be vertical or oblique and in this case the leather heel is shaped so that its inner forward corner is cut away with a vertical or oblique cut to fit the contour of the device.

The thickness of the device may be symmetrical so that its upper and lower plane surfaces are essentially parallel or it may be so designed that these surfaces are not parallel, in which case the lower surface may slope so that the device is thicker on the inner border 11 than on the outer 6, or so that it is thicker at the anterior edge than at the rear, symmetrically or asymmetrically, or these two slopes can be combined symmetrically or asymmetrically, so that approximately the forward inner point 12 becomes the lowest point in the inferior plane surface of the device. (Fig. 5).

The form of the device may be modified as required to adapt it to women's and children's shoes, spring heels, rubber soled shoes, sneakers, slippers, or other footwear. If the heel of the shoe is too low to use the appliance, the heel may be built up to a proper height. If it is too high, a portion can be removed.

The device may be attached to the leather heel design and the shank of the shoe by cement or other adhesive, or by means of nails or screws 14 which are inserted through holes or perforations in the rubber prepared therefor, about which holes there are, imbedded in the rubber, flat metal washers 13 in the usual manner, except that, with reference to the holes or perforations near the forward edge of the leather heel, the washers may be made larger or of eccentric design 15, so that some portion thereof projects over into that segment of the rubber heel which does not underlie the leather heel; or a section of fabric or wire, or other supporting material (not shown) may be incorporated into the rubber for the purpose of reinforcing the device, and particularly the forward free section thereof, and of strengthening its attachment to the leather heel, or the forward free section can be attached to the shank directly by means of a nail or rivet, or to the heel behind it by means of a nail inserted horizontally.

There is a tread on the under surface of the device consisting of projections arranged in some design. These may be a number of circular welt-like protuberances 16, if desired, about the perforations for the nails or screws which will serve to prevent slipping, to increase the length of life of the device, and to add to its resilience. With reference to the anterior edge of the heel, the perforations (and the surrounding circular welts) shall be placed near the interior edge of the leather heel so as to give the strongest possible support and attachment to the forward free por-

tion of the rubber heel; and that at the forward inner corner 12, representing the projected segment of the rubber heel, there may be another circular downward projection 17, perforated or unperforated, of the same thickness as the projections of the tread and to compensate therefor.

All the above is intended to be more illustrative than limitative so that I do not limit myself thereto except as contained in the subjoined claim.

Having thus described my invention and illustrated its use what I desire to secure by Letters Patent of the United States is:

An arch support, comprising a main portion adapted to be attached to the heel of a shoe to form the top lift thereof, and a forward portion extending under the inner edge of the shank of the shoe to support the inner longitudinal arch of the foot, the said forward portion being tapered in width and height longitudinally from the heel end and in height transversely from the inner side, the said portion contacting throughout with the shank of the shoe, the said forward portion having a protuberance extending below the normal tread surface of the heel.

In testimony whereof I hereunto set my hand this 17th day of April, 1929.

ALBERT EHRENFRIED.

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