Oct. 20, 1931. C. TWEEDIE 1,828,086

ARCH SUPPORT

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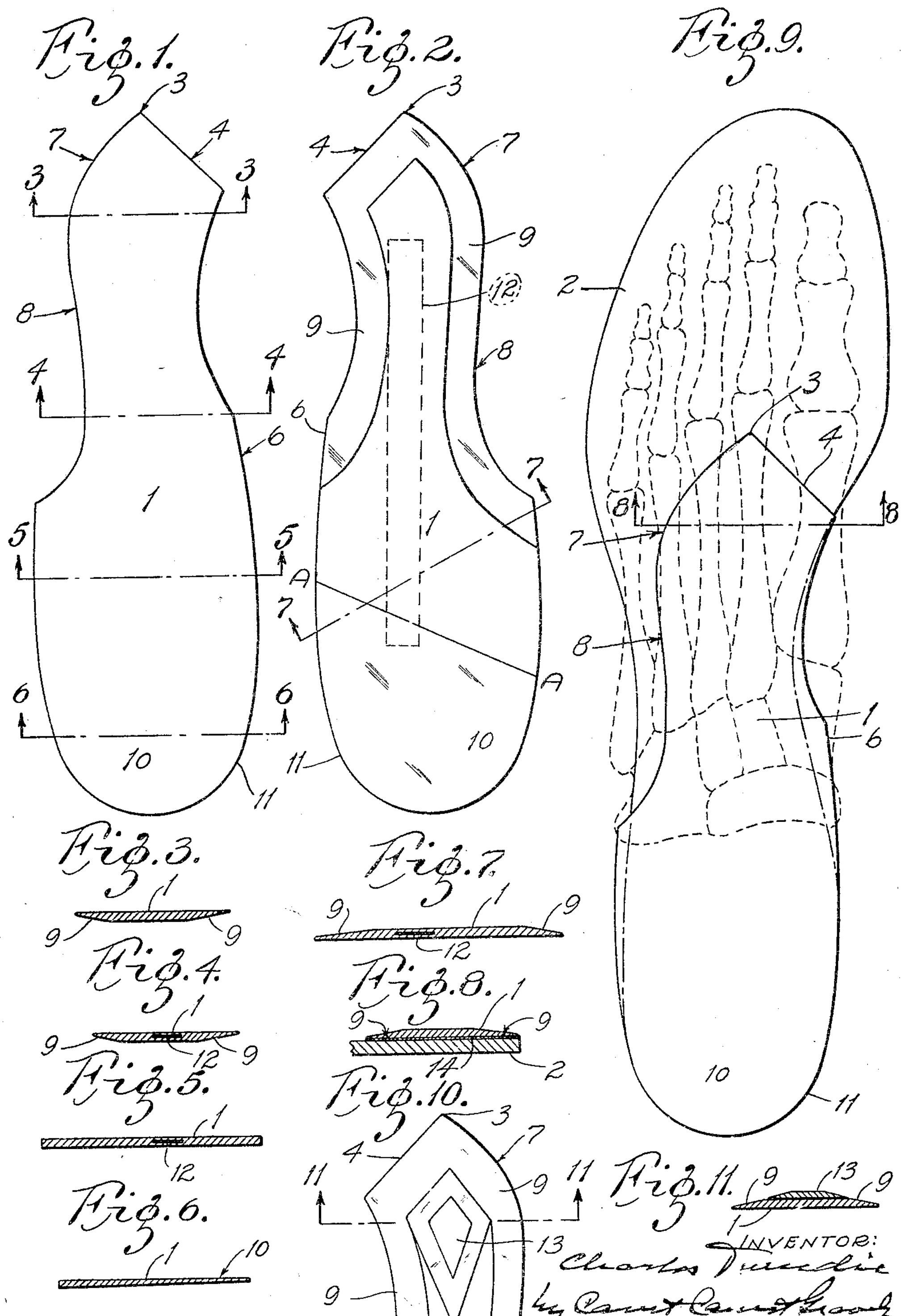

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UNITED STATES PATENT OFFICE

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ARCH SUPPORT

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My invention relates to devices of the kind commonly known as arch supports. Its principal object is to provide a device suitable for application to an ordinary shoe and adapted to afford support for the transverse and longitudinal arches of the foot. It consists principally in a pad hereinafter described; it also consists in the combination of said pad with a shoe; and it also consists in the parts and combinations of parts hereinafter described and claimed.

In the accompanying drawings, which form part of this specification and wherein like numerals refer to like parts wherever they occur,

Fig. 1 is a view of the upper face of a leather pad embodying my invention, as designed for use in the left shoe,

Fig. 2 is a view of the under side of said pad,

Figs. 3, 4, 5 and 6 are cross sectional views of the pad on the lines 3—3, 4—4, 5—5 and 6—6, respectively, of Fig. 1,

Fig. 7 is a cross section on the line 7—7 of Fig. 2,

Fig. 8 is a cross section on the line 8—8 of Fig. 9,

Fig. 9 is a plan view showing the position of the pad with reference to the sole of the shoe, and with the foot bones indicated in dotted lines.

Fig. 10 is a modification of the pad, which is provided with an additional piece of leather to increase the thickness thereof, and

Fig. 11 is a cross section on the line 11—11 of Fig. 10.

My pad comprises a piece of leather 1 or other suitable lamellar material whose rear portion conforms fairly closely to the rear part of the insole 2 of the shoe with which it is designed to be used; and said pad is of such length as to reach from the back or heel end of the insole to a point 3 slightly back of the anterior end of the second metatarsal bone of the foot on which said shoe is worn. From this foremost point, the front edges of the pad diverge laterally and rearwardly along lines substantially parallel with the anterior metatarsal joints. Thus, the inner front edge 4 inclines, substantially parallel with the line passing through the middle points of the anterior ends of the first and second metatarsals to the inner edge of the insole 2, and the inner side 6 of the pad follows the inner side of the insole fairly closely back to the heel. Starting at said foremost point 3 of the pad, the outer front edge 7 thereof inclines rearwardly and outwardly substantially parallel with the line of the second, third, fourth and fifth anterior metatarsal joints; but instead of reaching the outer edge of the insole, the outer side line 8 of the pad is so located as to be directly below the space between the fourth and fifth metatarsals. At or just back of the posterior end of the fifth metatarsal, the pad is widened out to substantially the width of the insole, whose outer edge is followed fairly closely thence to the heel.

The marginal portions of the entire front portion of the pad are beveled off to fairly sharp edges so that the thickness of the pad will increase from its edges throughout fairly wide marginal bands 9 to the full thickness of the leather. The heel portion 10 is likewise beveled from the full thickness of the leather along a line A—A that runs obliquely from the forepart of the heel on the inner side to the middle portion of the heel on the outer side, as indicated by the line A—A in Fig. 2. The thickness of the heel portion therefore increases from a minimum at a point 11 near the inner side of the heel near the back thereof forwardly and outwardly to the region forward of the line A—A.

By the design hereinbefore described, the front ends of the metatarsal bones are forward of my pad and the fifth metatarsal bone is entirely clear of the pad; but the transverse arch portion of the foot back of the second, third and fourth metatarsals is given support by the pad thereunder, whose thickness increases gradually from its edges. The condition is similar with respect to the longitudinal arch whether a steel shank is used in the shoe or not, and whether a steel shank is used with the pad or not. If desired to stiffen the pad endwise, such a shank 12 may be mounted flush with the lower surface of the pad as indicated in dotted lines in Fig. 2. The purpose of beveling the inner rear portion of the

heel is to compensate for the fact that the heel bone reaches lower on the inner side of the foot than on the outer side.

In the modification illustrated in Fig. 10 the thickness of the pad is increased at the middle of the transverse arch portion of the foot by means of an extra piece 13 of leather glued thereon. This piece of leather is preferably shaped so that its front edges will follow the lines of bevel of the main pad member, and said extra piece is likewise beveled in harmony with the main member. Instead of permanently securing said extra piece 13 to the pad, I may form a pocket between the insole and the pad in which said extra piece may be removably received.

In practice I prefer to make my pad of leather and bevel off the lower face; but it may be made of other material, such, for instance, as molded rubber, in which case it is preferably to make the lower surface substantially flat and the upper surface convex.

My pad may be applied to the shoe in the course of manufacture of such shoe in any suitable way as by cementing, sewing or riveting; or it may be applied to a shoe already completed without regard to the use of a pad. In the latter case, it may be provided with a coating of dry gum or other adhesive 14 to facilitate its application to the shoe.

What I claim is:

1. The combination with a shoe of an arch support pad comprising a single piece of material adapted to underlie the instep and heel of the foot of a wearer and whose front end is of angular form with the foremost point positioned to lie just back of the position of the anterior head of the second metatarsal whence said front edge extends inwardly and rearwardly substantially parallel with the line of the first and second anterior metatarsal joints to the marginal portion of the insole, the outer front edge extending outwardly and rearwardly substantially parallel with the line passing through the second, third and fourth anterior metatarsal joints, and the outer side edge being positioned below the space between the fourth and fifth metatarsals, the forward portion of said pad being of increasing thickness inwardly from its margins, the heel portion of said pad being of increasing thickness from the rear inner portion thereof.

2. The combination with a shoe of an arch support pad comprising a single piece of material adapted to underlie the instep and heel of the foot of a wearer and whose front end is of angular form with the foremost point positioned to lie just back of the position of the anterior head of the second metatarsal whence said front edge extends inwardly and rearwardly substantially parallel with the line of the first and second anterior metatarsal joints to the marginal portion of the insole, the outer front edge extending outwardly and rearwardly substantially parallel with the line passing through the second, third and fourth anterior metatarsal joints, and the outer side edge being positioned below the space between the fourth and fifth metatarsals, the forward portion of said pad being of increasing thickness inwardly from its margins, the heel portion of said pad being of increasing thickness from the rear inner portion thereof, and a longitudinal stiffening member underlying the instep portion of said support.

Signed at Jefferson City, this 4th day of September, 1929.

CHARLES TWEEDIE.