W. M. SCHOLL.

ARCH SUPPORT.

APPLICATION FILED JUNE 23, 1916.

1,222,808. Patented Apr. 17, 1917.

Fig. 1.

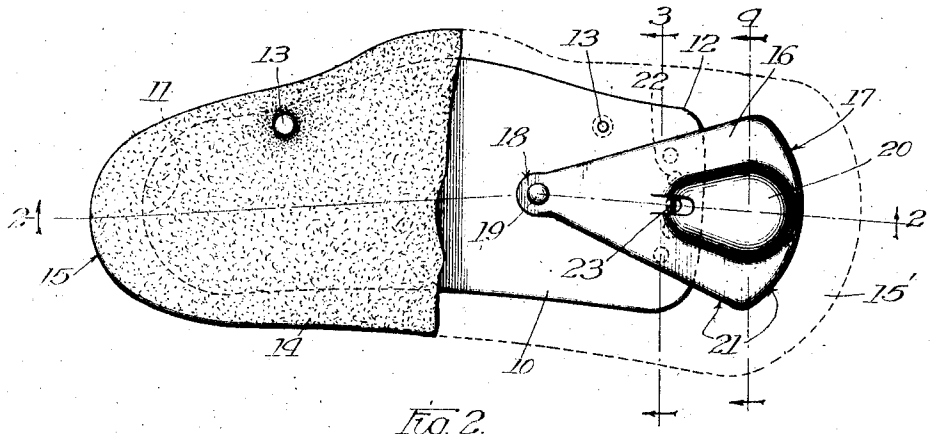


Fig. 2.

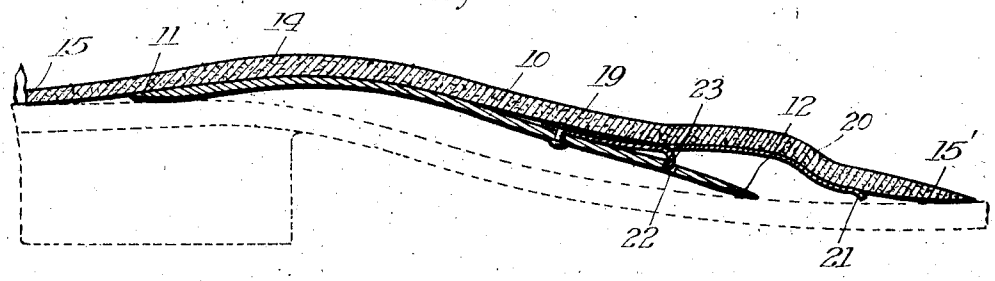
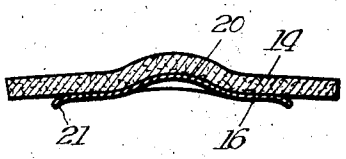


Fig. 3.



Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

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ARCH-SUPPORT.

1,222,808. Specification of Letters Patent. Patented Apr. 17, 1917.

Application filed June 23, 1916. Serial No. 105,343.

To all whom it may concern:

Be it known that I, WILLIAM M. SCHOLL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Arch-Supports, of which the following is a specification.

My invention relates to improvements in arch supports, and has for its object to provide an arch support construction particularly useful in the relief or correction of cases of "Morton's toe" or breaking down of the transverse arch normally formed by the anterior portion of the metatarsals.

In the embodiment of my invention shown in the drawings:—

Figure 1 is a plan view, with parts broken away, of an arch support embodying my invention.

Fig. 2 is a section on line 2—2 of Fig. 1.

Figs. 3 and 4 are transverse sections on lines 3—3 and 4—4 respectively.

In the embodiment of my invention shown I employ a main arch plate 10 arched longitudinally between its rear and front bearing edges, 11 and 12, so that when in the shoe, (as suggested in Fig. 2,) it will span from the heel portion of the shoe to the sole portion of the shoe, thereby to bridge the shank of the shoe without throwing material strain thereon. This main plate may, throughout its heel and shank portions, conform in longitudinal and lateral curvatures to the underside of a normal foot, and is preferably affixed, as by rivets 13 to a leather cover piece 14 that is suitably shaped to aid in positioning the appliance in the shoe of the wearer. Such leather piece, as in usual practice, preferably has its rear edge 15 arranged to abut against the counter-portion of the shoe so as accurately to define the longitudinal position of the appliance and its front edge, 15′, skived as usual, extends under the ball of the foot. Thus appropriately positioned in the shoe, the front end 12 of the main arch plate preferably lies a material distance in rear of the metatarso-phalangeal articulations, and an adjustable extension plate 16 is combined with the main plate to extend the area throughout which the foot receives metallic support forward to approximately the head processes of the metatarsals. It is my preference that the main arch plate be of German-silver, relatively thick for considerable rigidity, while the extension plate is of thinner metal and has materially greater resiliency, and preferably the extension-plate is associated with the main plate to give limited play to its elasticity. Thus the extension plate 16 has a wide bearing edge 17 at its forward end, preferably curved convexly for approximate conformation to the curve of the metatarsal heads, and it preferably tapers rearwardly to a narrower bearing area 18 at the apex of which it is connected with the main plate as by a rivet 19 well in rear of the extremity 12 of said main plate. In effect, therefore, the extension-plate structure stands as an end-supported spring, at one end adapted to bear on the shoe and the other end bearing on a portion of the main plate between the ends of the latter and preferably approximately centrally of the transverse span of said-main plate.

The extension plate thus arranged is preferably of generally triangular form for approximate conformity to the shape of the superjacent plantar ligaments of the foot, and in practice I usually prefer to make the transverse extent of the anterior bearing of such plate approximately to conform to the area of the second, third and fourth metatarsals. I also prefer to provide in the extension plate a hump 20 having a convexity in excess of that required for the mere conformity to the proximate surface of the normal foot, so as to exert a positive upward pressure adjacent the head of one or more selected metatarsals. The perimetral portions of the extension plate, throughout so much thereof as is normally free from bearing on the main plate, are preferably curved downwardly, as at 21, thereby both to avoid abrupt shoulders in the appliance that might give discomfort and to give to the extension plate a degree of resiliency within its own slightly-cupped area.

As a matter of desirable refinement I preferably make the extension plate adjustable to vary the location of the hump 20 so that its restorative upward pressure may be primarily exerted beneath the anterior portion of either the second, third or fourth metatarsals, and to this end I preferably use rivet 19 as a pivot, and provide in the main plate depressions 22 adapted to be engaged by a spur 23 appropriately provided in the extension plate to register therewith.

The projection of the spring extension plate beyond the forward bearing edge of

the main arch plate insures adequate but yielding support to the affected portion of the foot for curative effect and comfort in cases of "Morton's toe," the springiness of the extension plate giving it the facility first to yield for perimetral contact with proximate portions of the main plate, with a further but less sensitive yieldability in decreasing the curvature of the extension plate itself. Furthermore, the partial independence of action of the extension plate and main plate enables the shoes of the wearer to flex at a point farther back on the sole than would be the case if the main plate were rigidly extended to the full area covered by the extension plate. Many other and further advantages of the structure will be apparent to those skilled in the art, and it will be understood that while I have described in some detail a particular embodiment of my invention for purposes of full disclosure, it is capable of many changes of structural detail and arrangement without departure from the spirit of the invention and within the scope of the appended claims.

Having described my invention, what I claim is:—

1. In a device of the character described, a main plate provided with front and rear bearing surfaces and adapted to span across the shank of a shoe from heel to ball thereof, and an extension plate arranged to bear at its rear end on the main plate between the ends of the latter and at its front end arranged to bear on the sole of the shoe and to underlie the anterior portion of the metatarsals, said extension plate being resiliently depressible with respect to the main plate.

2. In a device of the character described, a main plate provided with front and rear bearing surfaces and adapted to span across the shank of a shoe from heel to ball thereof, and an extension plate arranged to bear at its rear end on the main plate between the ends of the latter and at its front end arranged to bear on the sole of the shoe and to underlie the anterior portion of the metatarsals, said extension plate being pivotally mounted on the main plate.

3. In a device of the character described, the combination of a main arch plate for spanning the shank of a shoe, and an extension plate having a rear portion bearing upon the main plate and having its front portion extending beyond said main plate, to rest upon the sole of the shoe, said extension plate being relatively resilient and said main plate relatively stiff, whereby said extension plate may yield toward the main plate and said extension plate having a hump near its front end curved in excess of any normal curvature of the foot.

4. The combination with a main plate adapted to span the shank of a shoe with its rear end arranged to be positioned materially in rear of the heads of the metatarsals of the wearer, and a resilient extension plate bearing at its rear end on the main plate and at its forward end arranged to bear on the shoe and otherwise normally free from contact with subjacent parts, the forward end of said extension plate arranged for location near the heads of the metatarsals, said extension plate being resilient lengthwise between its bearing portions, and down-bent at its side edges for resiliency within its own area, whereby the said plate may first yield into contact the main plate and further by its spreading action.

In testimony whereof I hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM M. SCHOLL.

In the presence of—
STANLEY W. COOK,
MARY F. ALLEN.