April 5, 1932. M. GLÜCKAUF 1,852,879

ORTHOPEDIC SOLE

Filed Jan. 7, 1929

Fig. 1.

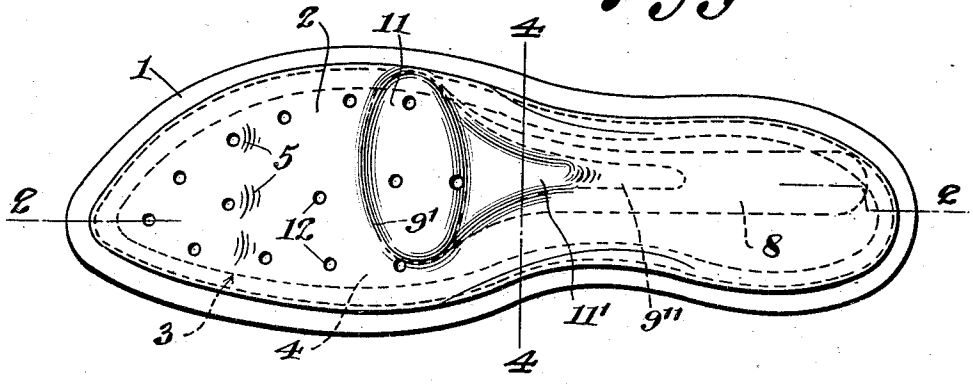


Fig. 2.

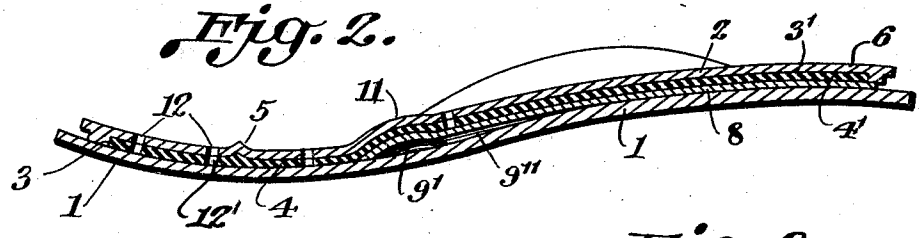


Fig. 3.

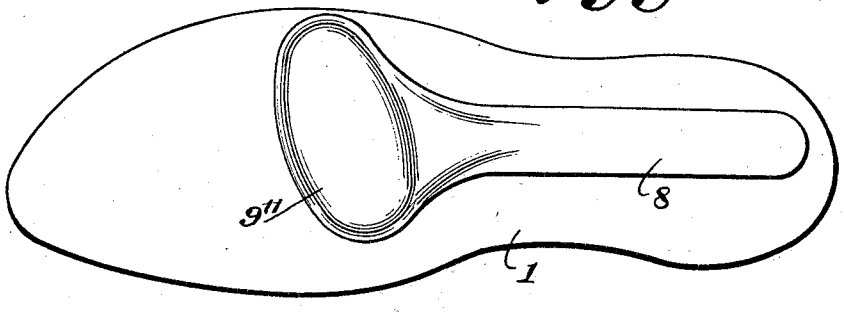
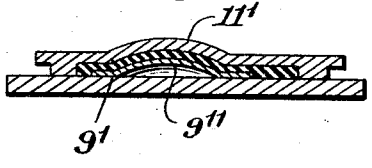


Fig. 4.



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UNITED STATES PATENT OFFICE

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ORTHOPEDIC SOLE

Application filed January 7, 1929, Serial No. 330,875, and in Germany January 18, 1928.

My invention relates to soles and more particularly to soles having an outer sole, an inner sole, a resilient intermediate sole, and a metal insertion, and it is an object of my invention to improve a sole of this type.

To this end, I provide an elevation on the inner sole and a boss on the insertion to fit the elevation, and extend the intermediate sole beyond the elevation.

In this manner I provide an orthopedic sole which is adapted for quantity production and may be manufactured at normal cost whereas heretofore they could only be made to order and so were rather expensive. Shoes equipped with my soles can be made on a quantity production scale for ladies, gentlemen and children, and will not only make walking pleasant but also will counteract depression of the metatarsal bones which is a particular advantage.

The insertion may be made of metal or any other resilient material but is preferably made of metal and is springy so that it may yield when the sole is bending. This insertion is combined with the intermediate sole which may be of cellular or sponge rubber or any other resilient material and cooperates in the moulding of the sole on the last so that the sole fits the foot exactly and supports it, as it were, on a bed. My sole thus compares favourably with soles of similar type which are comparatively rigid and may hurt the foot.

The invention is clearly illustrated in the accompanying drawings, in which:—

Fig. 1 is a plan view of an improved sole constructed in accordance with this invention and having a single intermediate sole,

Fig. 2 is a longitudinal sectional view taken on line 2—2 of Fig. 1,

Fig. 3 is a plan view of a modified insertion, and

Fig. 4 is a cross sectional view on the line 4—4 of Fig. 1.

In all figures, 1 is the outer, 2 is the inner sole which is provided with a rib at its edge so as to form a recess 3 for the reception of the intermediate sole 4 or 4′, 12, 12′ are registering perforations in the inner and intermediate soles with the object of increasing the resiliency of the sole and to impart to it a certain permeability, 5, 5 and 11 are elevations formed on the inner sole by moulding it on the last, 6 is the heel end of the sole, 8 is an insertion extending from the heel toward the instep, and 9′ is a convex raised portion on the inner end of the insertion which fits the elevation 11. In this connection attention is directed to the fact that the convex raised portion tapers rearwardly as at 9″ and also extends lengthwise of the sole toward the heel.

In the sole illustrated in Fig. 2 the intermediate sole 4′ extends from the toe to the heel end of the sole.

As will appear the intermediate sole 4 or 4′ enters between the convex raised portion 9′ and the elevation 11 on the inner sole 2 so that any unpleasant pressure at this point is eliminated.

When the sole is being moulded on the last the convex raised portion 9′ forces the intermediate and inner soles into the corresponding cavity of the last so that the elevation 11 forms in the region of the metatarsal bones and is permanently but resiliently supported by the convex raised portion 9′.

Referring now to Fig. 3 an insertion 8 with a convex raised portion 9″ is shown which is made as a narrow strip the widest part of which is the base of the convex raised portion.

I claim:

1. A sole comprising the combination with an outer sole, an inner sole and a metal support interposed between said inner sole and outer sole and having a convex raised portion under and extending to the height of the metatarsal bones, said raised portion also extending lengthwise of the sole towards the heel and tapering rearwardly, of a perforated elastic intermediate sole of cellular rubber on said metal support extending over the entire length of the sole, the inner sole having perforations registering with the perforations of the elastic intermediate sole, as and for the purposes set forth.

2. A sole comprising the combination with an outer sole, an inner sole and a metal sup-

port interposed between said inner sole and outer sole and having a convex raised portion under and extending to the height of the metatarsal bones, said raised portion also extending lengthwise of the sole towards the heel and tapering rearwardly, of a perforated elastic intermediate sole of cellular rubber on said metal support extending over the entire length of the sole and covering the metal support and the portion of the outer sole not covered by the metal support, the inner sole having perforations registering with the perforations of the elastic intermediate sole, as and for the purposes set forth.

In testimony whereof I have signed my name to this specification.

MAX GLÜCKAUF.