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M. N. MARGOLIN

2,200,849

INNER SOLE

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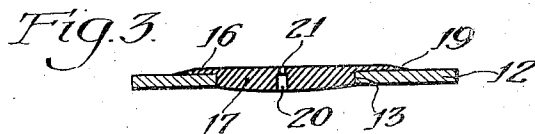


Fig. 1.

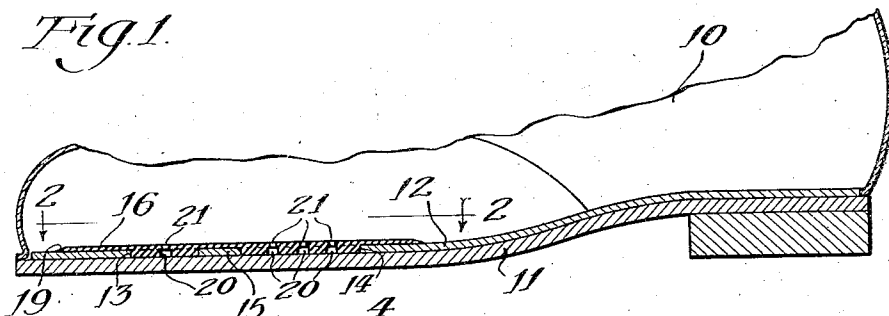


Fig. 2.

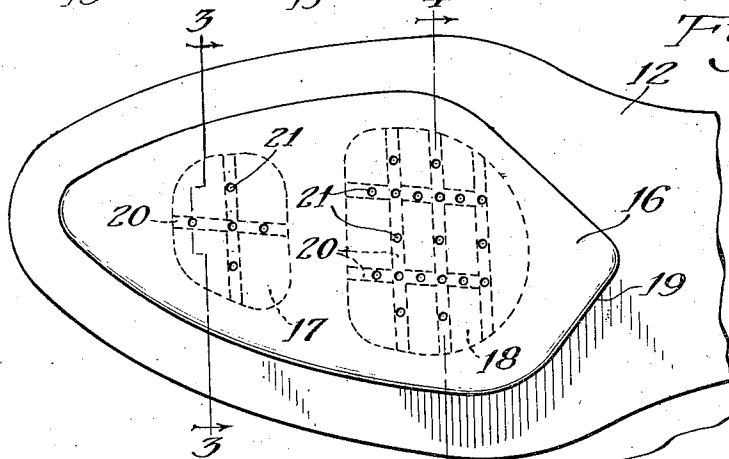


Fig. 6.

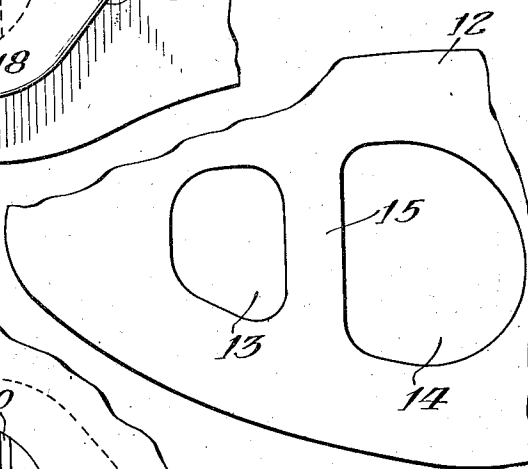


Fig. 4.

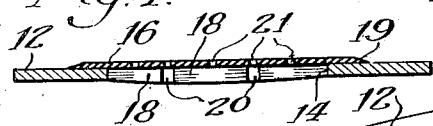
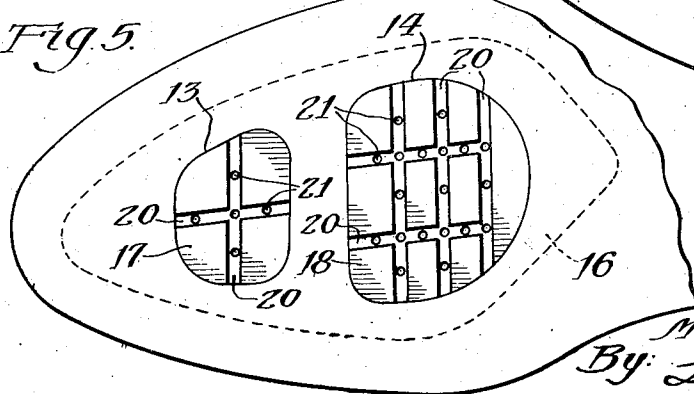


Fig. 5.



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UNITED STATES PATENT OFFICE

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INNER SOLE

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2 Claims. (Cl. 36-3)

This invention relates to improvements in inner soles of shoes, and particularly to inner soles of the class having a substituted material inserted and combined therewith to provide a limited area of greater resiliency and flexibility.

Inner soles of this class have heretofore been known and in general provide for the insertion of some resilient material, such as rubber, sponge rubber, or other suitable material into an opening formed in the fore part for the purpose of providing better metatarsal support, greater flexibility, and general increased comfort in the wearing of the shoe.

The desirability and importance of making provision for breathing of the shoe and the provision of means for permitting free penetration of air particularly through the insert material has also been recognized. This has generally been accomplished heretofore by means of perforations extending through the thickness of the insert material. Such provision has, however, been largely ineffectual for the reason that the perforations become collapsed or closed in use, particularly when formed through a sole thickness of resilient material, and have required insertion of non-resilient bosses or the like expedients which introduce protuberances and add elements of undesirability and discomfort which the insert was primarily intended to eliminate.

Likewise it has been recognized that although it is desirable to utilize inserts of substantial surface area on the fore part of the inner sole, difficulties in the manufacture and assembly have been encountered due to distortion of the apertured inner sole when being worked upon in the construction of the shoe resulting in displacement of the insert, the requirement of temporary retaining means with attendant inefficiencies and uneconomical operation, and the added tendency toward displacement and distortion during use of the shoe.

It is therefore an object of this invention to provide an inner sole of the class having a substituted material in the fore part thereof for aiding in metatarsal support, flexibility, resiliency and general improved comfort wherein breathing means are provided without the requirement for additional perforation maintenance means and which at the same time provides for an increased breathing area and effective ventilation means.

Another object is to provide the fore part of the inner sole with a plurality of apertures extending over an effectual surface area thereof and a unitary substituted material insert therefor which will render assembly and interlodging of

the respective portions simple and expedient and which will prevent distortion during assembly and use without the requirement of temporary or permanent retaining means.

Other objects relates to economies of operation and construction and the details and arrangement of parts which will be apparent from a consideration of the following specification and drawing, wherein:

Fig. 1 is a fragmentary longitudinal section through a shoe illustrating my improved construction.

Fig. 2 is a plan view of the fore part of an inner sole made in accordance with my invention, on the line 2-2 of Fig. 1.

Fig. 3 is a section on the line 3-3 of Fig. 2.

Fig. 4 is a section on the line 4-4 of Fig. 2.

Fig. 5 is a bottom view of composite inner sole portion shown in Fig. 2.

Fig. 6 illustrates the apertured portions of the inner sole adapted to receive the unitary insert and overlay.

Referring to the drawing, the shoe conventionally comprises the outer sole 11, inner sole 12, and a stocking lining (not shown), overlying the inner sole. The inner sole generally is formed of leather, and instead of providing a single aperture for the reception of the insert, I provide a plurality of apertures, preferably longitudinally spaced and substantially aligned on the fore part of the inner sole, or as illustrated, I provide preferably the two apertures 13 and 14, and which although compositely form an apertured area embracing a major central portion of the fore part of the inner sole, are at the same time spaced apart by unitary inner sole material such as the strip 15 which extends transversely across the inner sole and divides the composite apertured area into the longitudinally spaced apart areas 13 and 14. Thus in forming the insert aperture, the strip 15 which extends between the marginal side portions of the inner sole apertured area serves to act as means for preventing distortion of the inner sole by reason of the aperturing thereof, particularly during the shoe assembly, while at the same time permitting the insertion of the metatarsal cushion support without detriment thereto. As a matter of fact this construction serves to more fully at all times retain the insert cushion in proper position, and serves as a means for preventing marginal displacement and twisting movement during use of the shoe.

The insert which may be of soft rubber, sponge rubber, or the like resilient and flexible material

comprises the overlay portion 16 and the depending cushion portions 17 and 18, the whole of the insert being integral. The overlay portion 16 of the insert is formed to have a surface extent 5 embracing all of the apertures and to overlie the marginal portions thereof, terminating in a tapered and converging edge, as at 19. The cushion portions 17 and 18 are of a contour adapted to snugly fit within the apertures 13 and 14 respectively, and thus the composite inner sole 10 comprises the overlay 16 embracing substantially the major portion of the fore part of the inner sole, and having unitary integral downwardly projecting cushions, in substantially symmetrical 15 aligned relationship to the overlay, but withal spaced apart by a unitary cross brace, which not only braces the apertured inner sole but also serves to more securely engage, retain and position the respective cushions.

20 It will be further noted that each of the cushions 17 and 18 are formed of a plurality of spaced apart sectors or projections, or the cushions may be considered to be divided into a plurality of spaced apart areas by means of the 25 channels 20 which extend substantially longitudinally and transversely of the shoe, thus giving added flexibility along the lines of natural flexing of the shoe in use, and may permit the use of cushioning material heretofore considered 30 unsuitable. The insert also comprises breathing or ventilating means formed in part by the perforations 21 which extend through the overlay 16 and open downwardly into the channeled areas 20 to form therewith an enlarged air circulation 35 space. It will also readily be seen that since the perforations 21 do not extend through the entire thickness of the cushions 17 and 18, flexing and compression will not pinch or collapse the per-

forations and without the aid of supports be at all times in full communication with the channels and in addition each perforation will be in communication with the entire channeled area of its respective cushion to provide a maximum of 5 breathing and ventilation.

I claim as my invention:

1. An article of the class described comprising an inner sole having a plurality of apertures 10 formed in the fore part thereof, adjacent apertures being spaced apart by a transversely extending integral inner sole portion, a unitary overlay on said inner sole embracing all of the apertured area thereof and resilient flexible inserts integral 15 with said overlay depending therefrom and fitting within said apertures, the said inserts being divided into a plurality of spaced apart sections and the said overlay being provided with a plurality of perforations opening downwardly between said sections. 20

2. An article of the class described comprising an inner sole having a plurality of apertures 25 formed in the fore part thereof, the said apertures being spaced and in composite substantially corresponding in contour to the contour of the said inner sole fore part, adjacent apertures being 30 spaced apart by a transversely extending integral inner sole portion, a unitary overlay on said inner sole embracing all of the apertured area thereof and resilient flexible inserts integral with said 35 overlay depending therefrom and fitting within said apertures, the said inserts being formed with downwardly opening intersecting grooves extending substantially longitudinally and transversely and the said overlay being formed with a plurality of perforations extending therethrough and into the channels formed by said grooves.

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