Aug. 24, 1943. M. MARGOLIN 2,327,361

RESILIENT VENTILATED INSOLE AND MIDDLE SOLE

Filed Oct. 15, 1940

Fig. 1

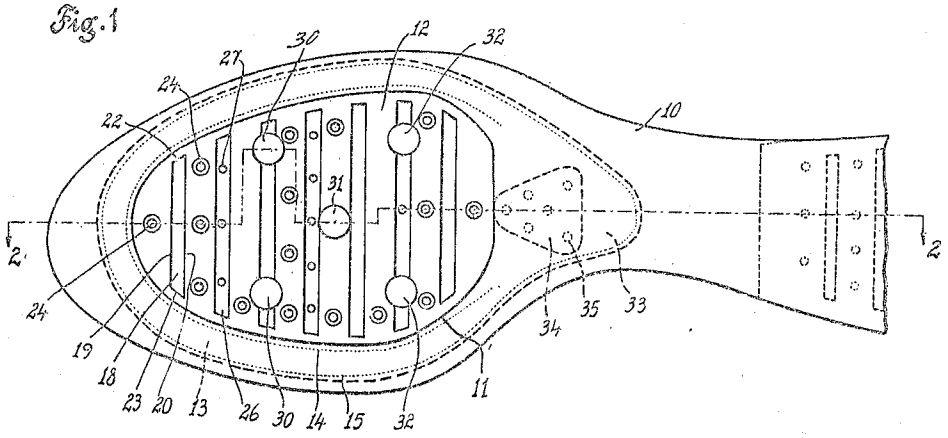


Fig. 2

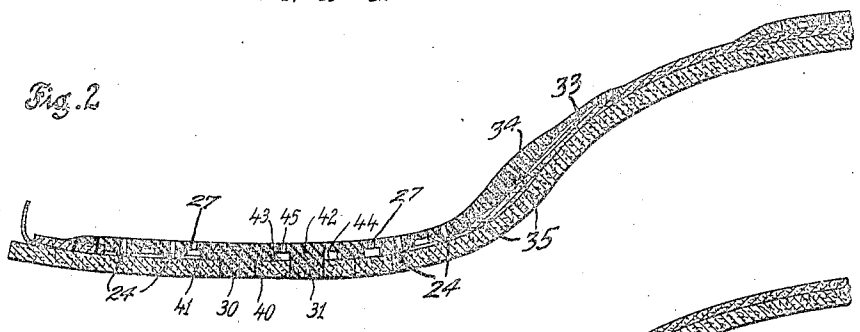


Fig. 3

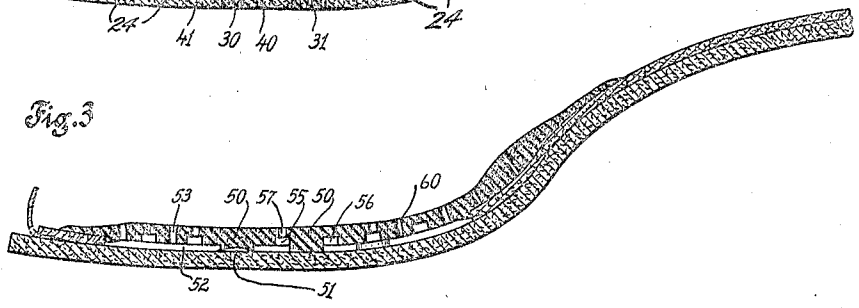


Fig. 4

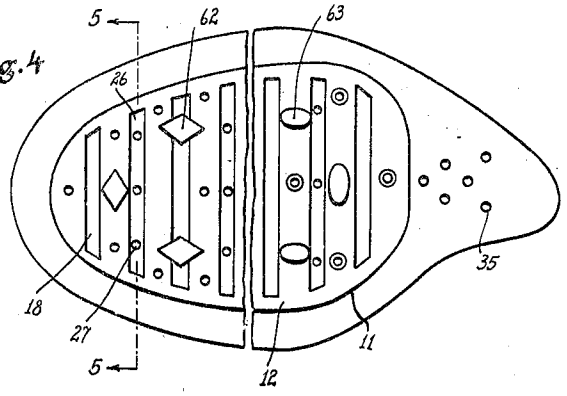
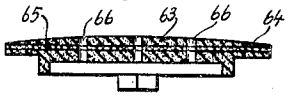


Fig. 5



INVENTOR
Meyer Margolin.
BY Ostrolenk & Greene
ATTORNEYS.

Patented Aug. 24, 1943

2,327,361

UNITED STATES PATENT OFFICE

2,327,361

RESILIENT VENTILATED INSOLE AND MIDDLE SOLE

Meyer Margolin, Elgin, Ill.

Application October 15, 1940, Serial No. 361,204

1 Claim. (Cl. 36—3)

My invention relates to a novel insole construction and more particularly my invention relates to an insole having a resilient insert located in an opening in said insole, the resilient insert having downwardly extending projections adapted to either rest on the outsole or to pass through suitable matching openings in the outsole and contact the walking surface.

It is the general object of my invention to provide a resilient insole construction adapted to provide forced breathing within the shoe and to provide greater resilience and foot comfort.

It is a further object of my invention to provide a novel insole construction comprising an insole with an opening therein, a resilient insert located in the opening, grooves having spaced side walls located on the under side of said insert, downwardly extending lugs or projections adapted to rest on the outsole beneath the insole and air communicating perforations located in said insert, either between or in said grooves.

It is a further object of my invention to provide a novel insole construction comprising an insole, an opening in the insole, a resilient insert adapted to fit within that opening and to be secured therein by a peripherally extending lap on said insert, said insert being of greater thickness in that portion of it which corresponds to the opening in the insole than the thickness of the peripherally extending lap and the insole to which that lap is attached.

It is a further object of my invention to provide a novel insole construction in which I provide an insert for an insole having downwardly projecting resilient lugs of different cross sectional shapes.

It is a further object of my invention to provide a novel insert for an insole having a combination of grooves and lugs which coact so as to cause forced breathing within the insole and shoe.

It is still a further object of my invention to provide an insert for an insole, which insert has integrally associated therewith a fabric reinforcing member adapted to prevent the destruction and permanent deforming of my novel insert having lugs and grooves in the course of its use in the shoe.

These and further objects of my invention will be apparent from a consideration of the drawing and the specific description thereof which here follows.

Figure 1 is a bottom view of a resilient insert and insole of my invention.

Figure 2 is a cross section taken along the line 2—2 of Figure 1 but with the outsole applied.

Figure 3 is a cross section of a modified form of my invention.

Figure 4 is a bottom view of a modified form of a resilient insert of my invention.

Figure 5 is a cross section taken along the line 5—5 of Figure 4.

Referring now more specifically to the drawing, in Figure 1 I show an insole 10 having an opening in the forepart of that insole. In that opening is disposed a resilient insert generally denoted as 11. The resilient insert comprises a relatively thick central portion 12 with a peripherally extending lap 13. The lap 13 extends over the insole 10 and is secured thereto by lines of stitching 14 and 15. In the thick central portion of the resilient insert 12 are located grooves 18 having spaced side walls 19 and 20. Preferably the grooves such as 18 are closed at their ends as by end walls 22 and 23. Perforations 24 extend through the relatively thick portion 12 of the insert and provide air communication between the bottom of the insole and the shoe interior.

As shown in the groove 26, I may provide perforations 27 located in the groove to enable air to be forced directly from the groove upwardly into the shoe interior.

Located in and over the groove are downwardly projecting lugs 30 and between the grooves is provided a downwardly projecting resilient lug 31. A plurality of such lugs may be employed.

At the rear of the opening in the insole the peripherally extending lap 13 is enlarged to provide a flap 33 on which is positioned a resilient metatarsal 34 having perforations 35 located therein for increasing the resilience of this metatarsal support. The metatarsal support is located on the flap on the top of the insole and is therefore shown in dotted lines.

As shown in Figure 2 the lugs 30 and 31 may extend through suitable openings 40 in the outsole 41. Similarly the lugs 32 may extend through suitable openings in the outsole. In the case of the lug 31 under the downwardly exerted compression of the ball of the foot in walking, the upper portion 42 of the lug 31 is compressed thereby compressing adjacent grooves 43 and 44 so that air is forced from these grooves through suitable perforations such as the perforation 45 in the groove 43 to the interior of the shoe.

In the form of my invention shown in Figure 3 the lugs rest on the outsole and do not pass therethrough. In this construction the compression exerted by the ball of the foot in walking compresses the lugs 50 and 51 so that the air cell 52 is also compressed, whereupon air flows from this air cell through the perforations 53 into the interior of the shoe. The air cell is bounded by the insert on top, the outsole below and the peripheral portion where the insole or the insert meets the outsole. The compression of the lugs 50 and 51 also acts to compress the adjacent grooves such as 55 and 56, the side walls of these grooves being moved toward one another so that air is forced from these grooves 55 and 56 through suitable perforations such as perforations 57 in groove 55 into the interior of the shoe.

When there is no perforation in the groove itself the air is forced from the groove through suitable adjacent perforations such as 60 which extend through the thickness of the insert into the interior of the shoe.

It is reiterated that the primary object of my novel insert construction is to provide increased resilience and forced breathing in the insole of the shoe. The combination of the downwardly projecting resilient lugs which rest upon the outsole and the adjacent grooves act to provide this increased resilience both in softness, because the shock of the step is absorbed by the compression of the grooves, and by the compression of the resilient air cell portions which are provided as shown in Figure 3. The forced breathing is obtained by the compression of the air cells between the insole and the outsole and also by the compression of the grooves having spaced apart walls, the compression of the grooves being effected both by their flexure in the act of walking when the foot moves back and forth and by their compression when the weight of the foot periodically compresses the lugs adjacent to these grooves.

The perforations which are located either between the grooves or in the grooves as shown at 53 and 57 act to permit air to flow from its source beneath the resilient insert to the shoe interior where it is needed.

As shown in Figure 3, while the ends of the lugs, such as lug 50, may be flat, I also provide that the ends may terminate in a cup shaped form and this cup shaped form, as shown at 51, increases the resilience of my construction in that the downward compression of the lug 50 is extended and also because the air held within the cup shaped end of the lug 50 is forced outwardly under the compression of the lug and air is drawn into that cup shaped member upon release of the compression. Since the forced breathing is an important element of my invention, this cup shaped form adding to the breathing effect as it does is an important feature.

Although not shown a cover may be and usually is provided over the insert and insole and this cover should be either porous to the flow of air or should have perforations located therein corresponding to the perforations in the insert.

In Figure 4 I show a bottom view of an insert of my invention and it will be noted that the lugs may have a cross sectional shape of for example diamond shape as shown at 62 or oval shape as shown at 63. These lugs of non-circular cross section are of value since they have a tendency to spread and provide increased compression of the grooves adjacent thereto.

As shown in Figure 5 the central portion 63 of the resilient insert is thicker than the extending lap portion 64 and this central portion 63 of the resilient insert is thicker than the combined thickness of the extending lap portion 64 and the insole (not shown) to which it is attached. Thus I provide a ball cushion support by means of my resilient insert and, further, the air is forced from the middle or thicker portion of the insert outwardly to the perforations at the sides of the insert and thence to the shoe interior. By this construction greater resilience is afforded in the central or ball portion of the foot where it is most needed.

As also shown in Figure 5 I provide a fabric member 65 which may be molded integrally with my insert or suitably combined therewith. This fabric 65 lies in the insert above the grooves and the fabric 65 may be provided with perforations therein corresponding to the perforations 66 located in the insert. I have found this fabric insert of great utility in my particular construction because of the constant flexing of the grooves under the action of the foot, since the compression by the lugs might tend to permanently deform the same. The fabric insert 65 tends to maintain the insert against spreading under continued compression.

Although I have shown the grooves as being enclosed at the ends, it is within the purview of my invention to have the grooves open ended. I have found, however, that better air flow is obtained when the ends of the grooves are closed. It is important, however, that the side walls or long walls of the grooves be spaced one from the other.

It is further within the purview of my invention to have the grooves intercommunicating with one another. Additionally I may provide grooves extending in directions other than substantially transversely across the insert.

As shown in Figure 1 by using my resilient insert in combination with a resilient heel pad as is more particularly set forth in my co-pending application Serial No. 354,496 I provide a complete heel to toe resilience in the shoe and forced breathing throughout the shoe.

In addition to using the dished out cup shape end of the projections as shown at 51, Figure 3, I may also use an outwardly domed projection for increasing resilience. When the projection is outwardly domed, then it gives gradually from the center out and resilience is increased over the ordinary flat outer surface.

The specific construction of my resilient insole which I have above set forth may be modified by those skilled in the art and the various features may be used alone or in combination with one another. I intend, therefore, to be limited not by the specific description above set forth, but only by the appended claim.

This application is a continuation in part of my co-pending application Serial No. 306,778, filed November 30, 1939 for Novel insole and outer sole combination.

I claim:

A resilient insole, transverse grooves positioned on the bottom of said resilient insole, the walls of said grooves being spaced apart from one another, the ends of said grooves being closed, said insole having at least one downwardly extending resilient projection located in at least one of said grooves, said resilient projection being located between the end walls of said groove and being in direct contact with the opposing long side walls of said groove.

MEYER MARGOLIN.