Dec. 16, 1947. M. MARGOLIN 2,432,533

VENTILATED MIDSOLE

Filed April 25, 1944

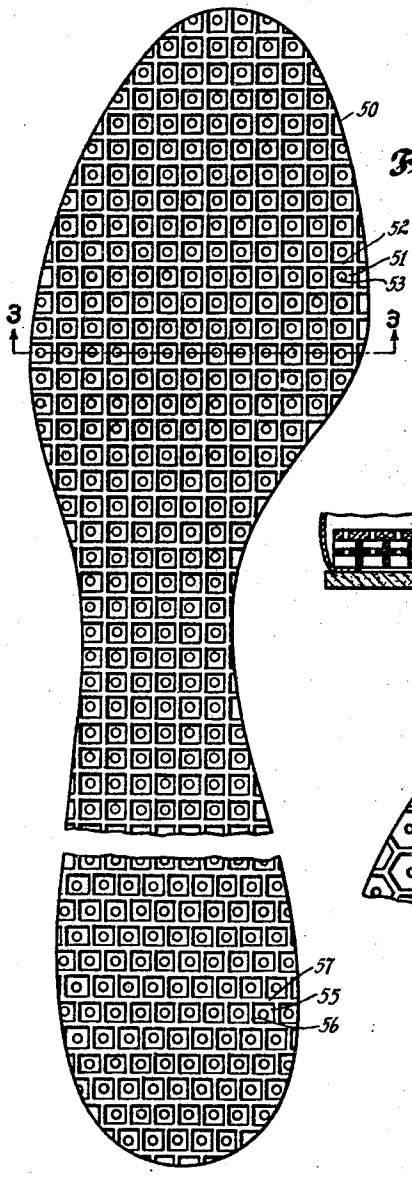

Fig. 1

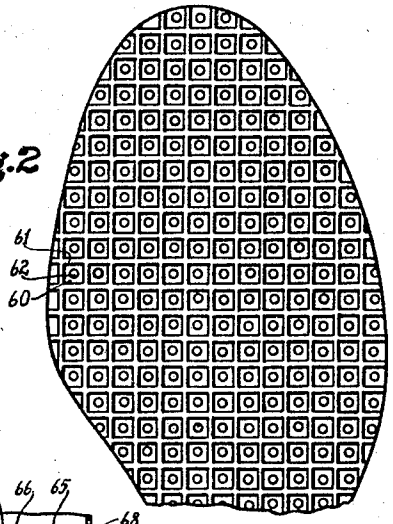

Fig. 2

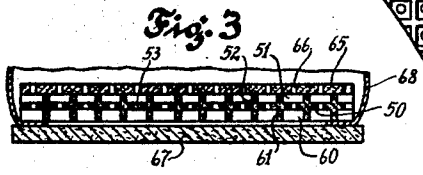

Fig. 3

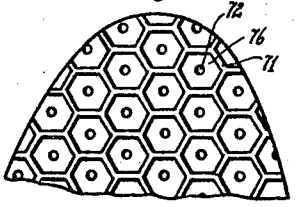

Fig. 5

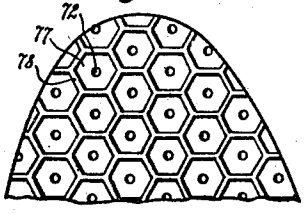

Fig. 6

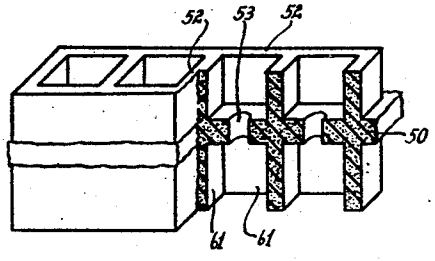

Fig. 4

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VENTILATED MIDSOLE

Meyer Margolin, Elgin, Ill.

Application April 25, 1944, Serial No. 532,588

1 Claim. (Cl. 36—3)

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My invention relates to a novel midsole construction and more particularly my invention relates to a resilient midsole, the resilient midsole being of such form as to provide increased resilience, forced breathing and at the same time being characterized by lightness of weight.

In my prior application Serial No. 257,351 and my prior Patents Nos. 2,153,021, 2,207,632, 2,307,416, 2,327,360 and 2,347,207 of which last patent this is in part a continuation, I have set forth certain constructions in which I secure a resilient insert to an insole having an opening, the insert carrying a lap which extends over and is secured to that portion of the insole which is adjacent the opening therein. As pointed out in the above applications and patents, it is the purpose of my construction to provide for forced breathing effects within the shoe, e. g. it is desired that an air pumping action be provided by the insert or midsole construction so that air is forced into the foot area of the shoe. It is further desirable that the insert be such as to provide increased resilience for the ball of the foot to provide for increased comfort.

I have found that weight is a factor of great importance in these constructions and according to the invention which I shall presently describe, I have succeeded in obtaining the desirable results of resilience, forced breathing effects and at the same time I have achieved a lightness of weight hitherto unobtainable in inserts or midsole having these characteristics.

According to the present invention I provide a midsole formed of resilient material such as rubber, either in the form of expanded closed cell rubber or expanded open celled rubber or sponge rubber.

It is the object of my invention to provide a novel resilient midsole for a shoe construction for increased foot comfort.

These and further objects of my present invention will become apparent from a consideration of the drawings taken in connection with the description which here follows.

Figure 1 is a top view of a middle sole of my invention, the middle sole being broken away to show two different structural designs.

Figure 2 is a bottom view of the middle sole of my invention.

Figure 3 is a cross section along the line 3—3 of Figure 1.

Figure 4 is a perspective of a small broken away section of the middle sole of my invention.

Figure 5 is a top view of a portion of a modified form of the middle sole of my invention.

Figure 6 is a bottom view of the middle sole shown in Figure 5.

In Figure 1 I show a middle sole generally denoted as 50 which comprises a multiplicity of

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cavities 51 which have the walls 52 and perforations 53. The walls 52 of the respective cavities act as walls for adjacent cavities as will be noted from an examination of this drawing. By means of this construction a middle sole of extreme lightness is obtained which is characterized by increased resilience and increased forced breathing effects. This is because the flexing and compression of the walls 52 is communicated to two cavities and at the same time communicated to adjacent walls causing flexing and compression of such walls and adjacent cavities.

In the lower part of the drawing which is broken away I show a modified structural design in which the cavities 55 are staggered with respect to one another, the walls 56 and 57, however, still taking the form of common walls for adjacent cavities.

In Figure 2 I show the reverse side of the middle sole shown in Figure 1. The structure will be more clearly apparent from a consideration of Figure 3 in which I show the middle sole 50, positioned between an insole 65 and the outsole 67, having perforations 66 to permit the flow of air from the cavities 51 and 60. The middle sole 50 is positioned between the inner sole 65 and the outsole 67. The relative position of the upper 68 in the shoe construction is illustrated. From Figure 3 it will be apparent that upon the flexing of the middle sole during the act of walking, the respective cavities 51 and 60 will be alternately compressed and decompressed causing the flow of air therefrom and the tension and stresses on the respective walls 52 and 61 of the cavities will be transmitted to adjacent walls and adjacent cavities.

In Figure 4 I show a section of the middle sole to more clearly illustrate the structure thereof, and like numbers here correspond to like numbers in Figures 1, 2, and 3.

In Figures 5 and 6 I show cavities 70 made up of hexagonal walls 71 and having perforations 72 located in such cavities to provide the communication of air from the cavities to the shoe interior. In the reverse side of the middle sole shown in Figure 6 I show cavities 77 having walls 78 and perforations or openings 72 extending therethrough.

According to the constructions here shown, therefore, I have set forth certain middle sole constructions, characterized by extreme lightness in weight and possessed of increased resilience and forced breathing effect for foot comfort. A minimum of solid material is used with a maximum of resilience and breathing spaces, and means are provided for causing transmission of the stresses in the respective cavity walls throughout the shoe.

I claim:

A middle sole comprising a layer of resilient

material, said layer having cavities on both sides, adjacent cavities having relatively thin walls, said cavities being polygonal in shape, and of relatively small width so as to present a supporting upper surface, said walls comprising resilient material, and openings in said layer connecting cavities on one side of said middle sole to cavities on the opposite side of said middle sole.

MEYER MARGOLIN.

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