May 2, 1944. M. MARGOLIN 2,347,701

MIDDLE SOLE AND INSOLE COMBINATION

Filed Dec. 2, 1941

Fig. 1

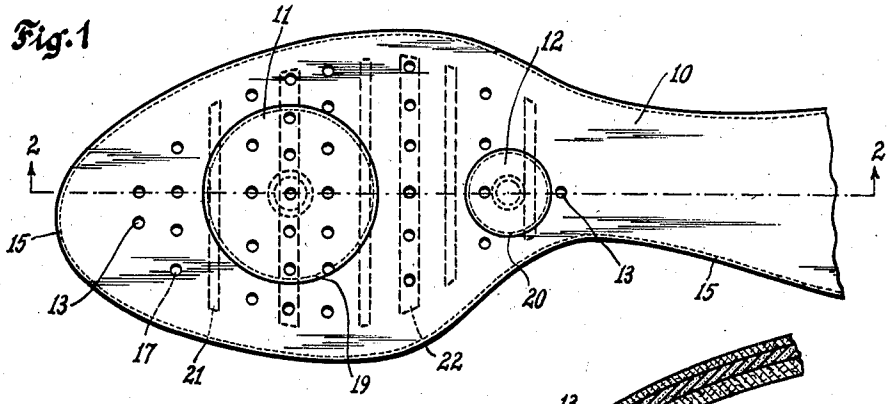


Fig. 2

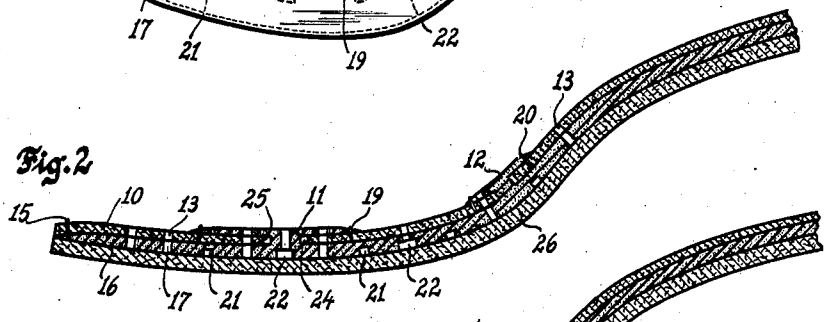


Fig. 3

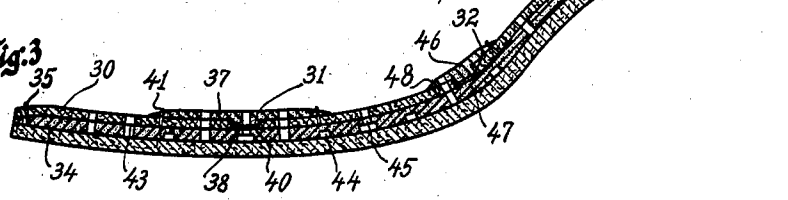


Fig. 4

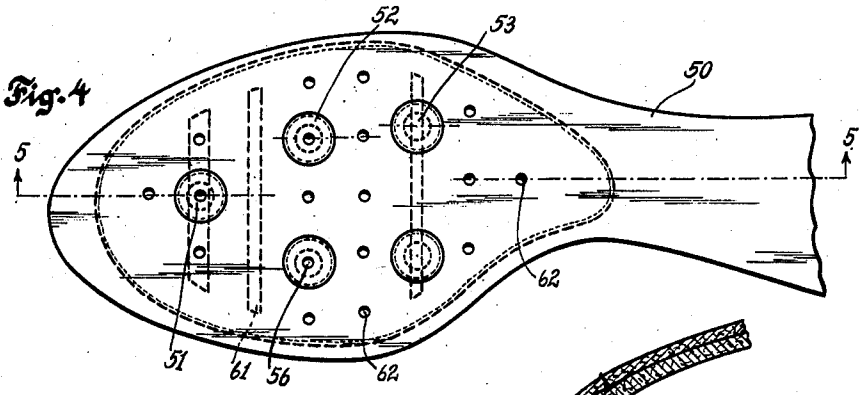
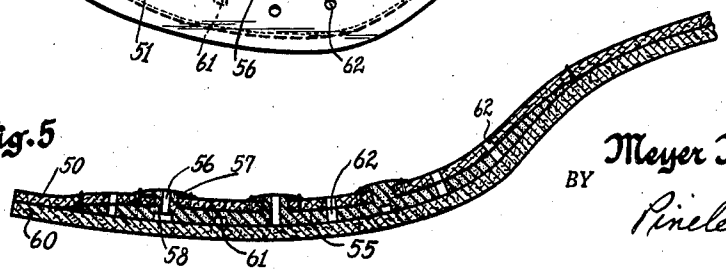


Fig. 5



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MIDDLE SOLE AND INSOLE COMBINATION

Meyer Margolin, Elgin, Ill.

Application December 2, 1941, Serial No. 421,292

5 Claims. (Cl. 36—3)

My invention relates to a novel middle sole-insole combination and more particularly my invention relates to a combination of middle sole formed of a resilient rubber-like material having resilient projections extending upwardly therefrom, the projections extending through openings in an insole superimposed over the middle sole, the upper portion of said projections being of extended area and extending over said insole.

In shoe construction it is desirable to provide resilience, air circulation and proper foot support, and this is done by means of insole or middle sole construction or by a combination thereof.

It is the object of the present invention to provide a shoe construction of increased breathing properties.

It is another object of the present invention to provide a shoe construction which affords resilient but firm and properly located support for the bottom of the foot.

It is a further object of this invention to provide for forced air circulation within the shoe.

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

In Figure 1 I show a plan view of the insole-middle sole combination of my invention.

Figure 2 is a cross section taken along the line 2—2 of Figure 1.

Figure 3 is a cross section of a modified form as shown in Figure 2 in which the projections are separate rather than integral with the middle sole.

Figure 4 is a plan view of a modified form of my invention in which the middle sole extends only in the forepart of the shoe and in which a multiplicity of small projections are located throughout the forepart.

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

Referring now more specifically to Figure 1, I show an insole 10 through which project the rubber-like projection 11 in the ball area of the foot and the rubber-like projection 12 in the metatarsal area of the foot. Perforations 13 are located at spaced areas on the insole and these perforations 13 communicate with suitable perforations in the middle sole therebeneath.

An examination of Figure 2 will more clearly indicate the structure shown in plan in Figure 1. Under the insole 10 and secured thereto by stitching 15 is a rubber middle sole 16 with which the projections 11 and 12 are integral. Perforations 17 extend through the middle sole 16 and communicate with the perforations 13 in the insole thereabove. The projections 11 and 12 are secured at their peripheral margin to the insole 13 by stitching 19 and 20. Grooves 21 are located in the bottom of the middle sole 16 and these grooves may be isolated from or in direct connection with the perforations 13 and 17 as in the case of groove 22. On flexing of the foot in walking, the resilient middle sole 16 is flexed and compressed causing air to be pumped from the grooves 21 and 22 through the adjacent or connecting perforations 13 and 17. Since the projection 11 is integral with the middle sole 16, slight lateral spacing is provided between central portion 24 of the projection 11 and the side wall 25 of the opening in the insole 10. The entire assembly is positioned over and suitably secured to an outsole 26.

Thus, the rubber projection 11 can be compressed and forced through the opening in the insole 10 whereupon it regains its original shape and spreads out over the insole 10 lying flat thereon. The upper portion of the projection 11 extends like a flap over the insole 10 and provides both increased thickness at that portion for ball cushion support and in the case of projection 12 provides metatarsal arch support. Further, the flexibility of the entire assembly is increased by the opening in the leather insole 10 through which the projections 11 and 12 extend.

In Figure 3 I show a modified form of this invention in which a leather insole 30 having openings 31 and 32 therein is secured over a rubber middle sole 34 by stitching 35. A rubber projection 37 is positioned and secured in the assembly by securing downwardly extending central portion 38 of the projection in the opening 31, the bottom of this projection being secured to the middle sole 34 by a suitable adhesive 40. The projection may be peripherally secured to the insole 30 by stitching 41. However the stitching 41 may not be necessary since the adhesive 40 firmly secures the projection to the middle sole. The middle sole and the insole are provided with perforations 43 and grooves 44 and the perforations and grooves may be in alignment as at 45. The rubber projection 46 may be suitably secured in the opening 32 in the metatarsal region and is adhesively secured to the middle sole by cement 47. The projection 46 is peripherally secured to the insole 30 by stitching 48.

By providing these separate rubber projections which are adhesively secured to the resilient middle sole through the insole I provide a somewhat simpler method of assembly of the construction,

while securing the new and desirable advantages thereof.

In Figure 5 I show an inner sole 50 through which extend projections 51, 52 and 53 which projections are integral with a rubber middle sole 55. By providing a central opening 56 in the resilient projection 51, I may make the opening 57 in the insole 50 of substantially the same size as the central portion 58 of the projection, since the middle portion 58 of the projection may then be compressed so as to facilitate the pressing through of the sidewardly extending rubber portion of the projection 51. As described above the peripheral margin of the projections 51, etc., may be secured by stitching to the insole. Such securement by stitching is not always necessary when the upper portions of these projections have a limited sideward extension. The middle sole-insole combination rests on the outsole 60.

The middle sole is provided with grooves 61 and perforations 62 which extend through both insole and middle sole.

By the construction here described, I provide a novel insole-middle sole construction for a shoe so that I obtain a firm unit for utility in the shoe that is possessed of very desirable resilience and forced breathing properties because of the construction as shown, and I also provide the increased thickness with softness in such areas where support is desired.

The projection extending through the insole and secured to the middle sole also firmly unites the middle sole to the insole and prevents any separation therebetween.

These projections may generally be described as comprising a neck portion and an extending mushroom-like top portion. The neck portion of the projection extends through the openings or holes in the insole, while the mushroom-like top portion extends over the insole or that portion of the insole adjacent the openings.

The projections are resilient and are formed of suitable resilient material such as rubber.

By means of the features and the structure above set forth, I obtain the desirable results of resilience, foot support, and proper circulation of air as set forth in the objects hereinbefore.

Various other modifications of my invention will suggest themselves to those skilled in the art. I accordingly desire that in construing the breadth of the appended claims that they shall not be limited to the specific details shown and described in connection with the above explanation.

I claim:

1. In combination, a middle sole and insole, said insole having at least one opening extending through the thickness thereof, said middle sole having at least one projection positively secured thereto and extending upwardly therefrom, said projection positively having a neck portion and an extending mushroom-like top portion, said neck portion extending through said opening in said insole, said mushroom-like top portion extending over said insole adjacent said opening.

2. In combination, a middle sole and insole, said insole having at least one opening extending through the thickness thereof, said middle sole having at least one projection positively secured thereto and extending upwardly therefrom, said projection positively having a neck portion and an extending mushroom-like top portion, and a central opening extending through said projection, said neck portion extending through said opening in said insole, said mushroom-like top portion extending over said insole adjacent said opening.

3. In combination, a middle sole and an insole, said insole having at least one opening extending through the thickness thereof, said middle sole having at least one projection positively secured thereto and extending upwardly therefrom, said projection positively having a neck portion and an extending mushroom-like top portion, said neck portion extending through said opening in said insole, said mushroom-like top portion extending over said insole adjacent said opening, and means for securing the edges of said mushroom-like top portion to said insole.

4. In combination, a middle sole and insole, said insole having at least one opening extending through the thickness thereof, said middle sole having at least one projection positively secured thereto and extending upwardly therefrom, said projection positively having a neck portion and an extending mushroom-like top portion, said neck portion extending through said opening in said insole, said mushroom-like top portion extending over said insole adjacent said opening, said openings in said insole being appreciably larger in diameter than the neck of said projection.

5. In combination, a middle sole and insole, said insole having at least one opening extending through the thickness thereof, said middle sole having at least one projection positively secured thereto and extending upwardly therefrom, said projection positively having a neck portion and an extending mushroom-like top portion, said neck portion extending through said opening in said insole, said mushroom-like top portion extending over said insole adjacent said opening, said middle sole having grooves on the underside thereof, and perforations through said insole and middle sole communicating with said grooves.

MEYER MARGOLIN.