July 23, 1940. T. A. NOONAN ET AL 2,209,280.

SHOE

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Fig. 1.

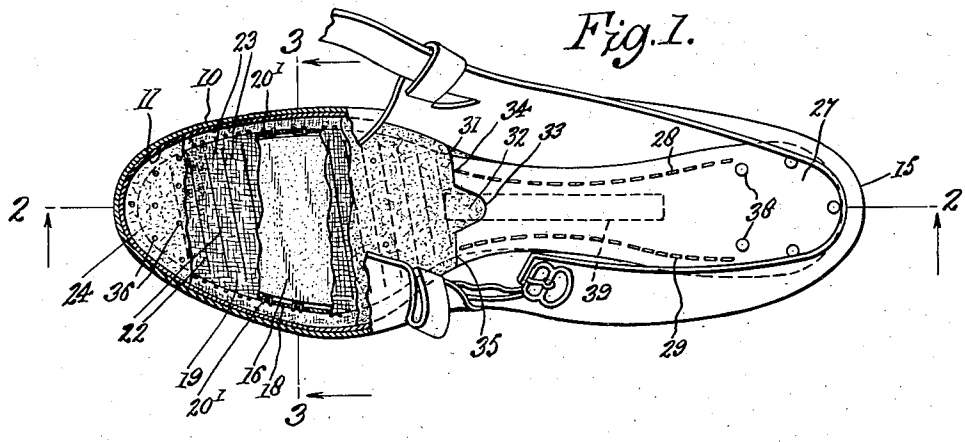


Fig. 2.

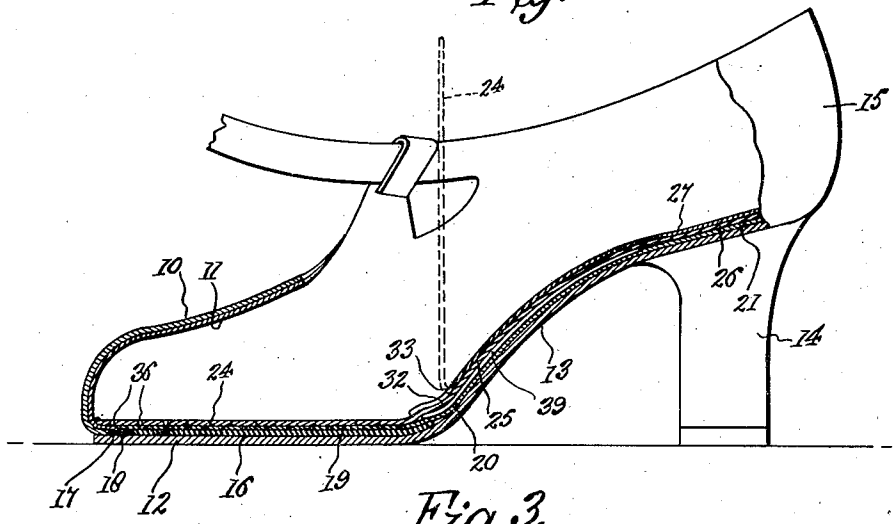
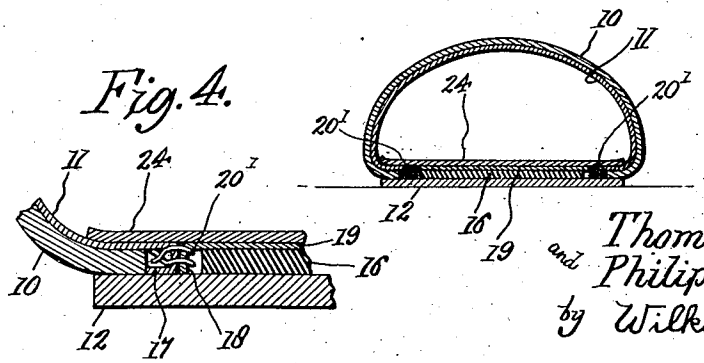


Fig. 3.

Fig. 4.



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Fig. 5.

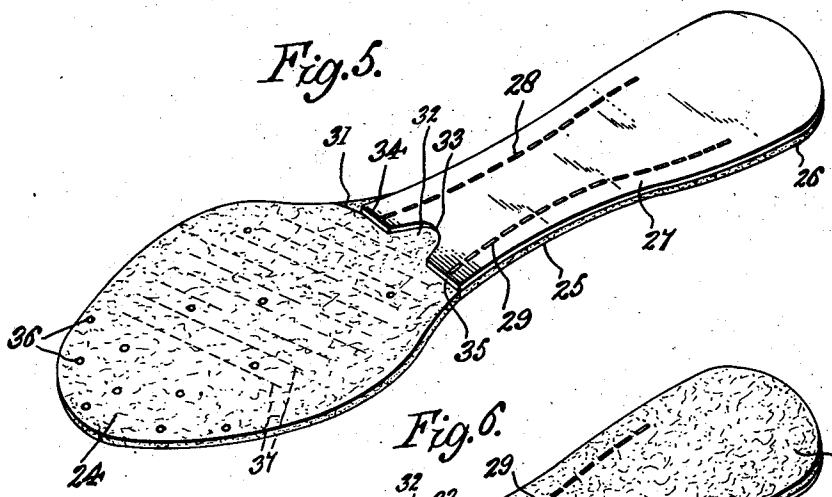


Fig. 6.

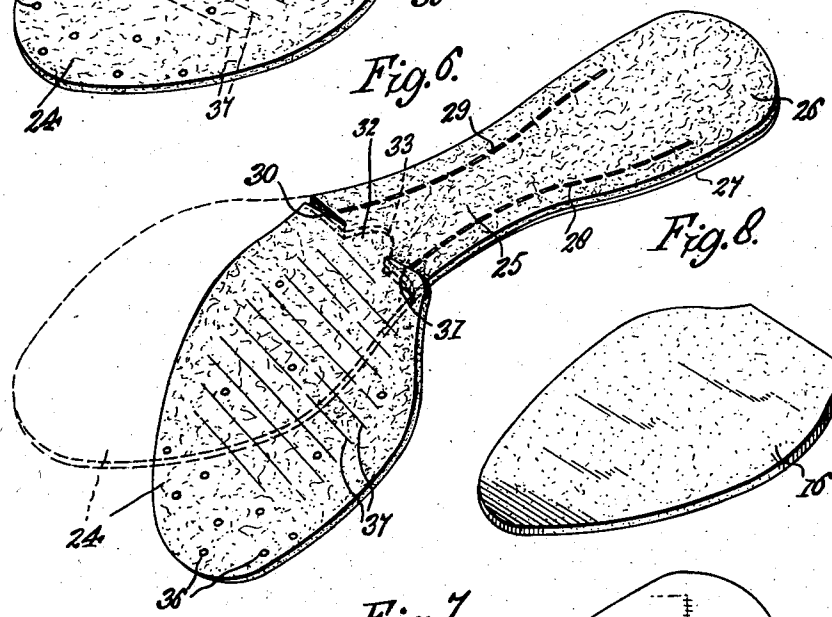
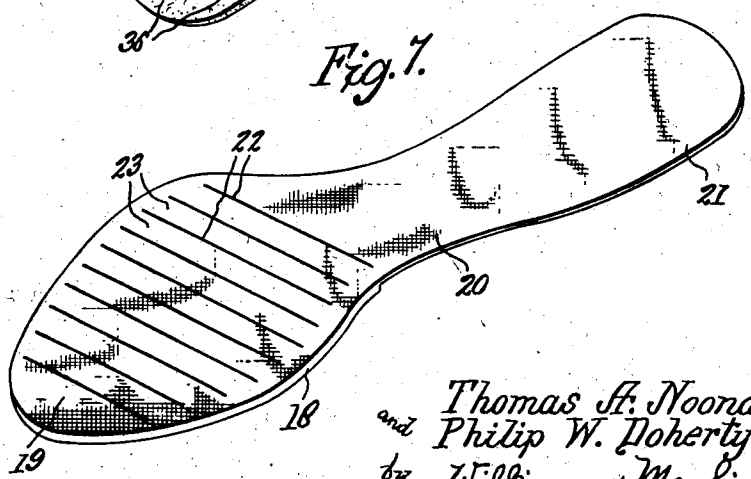


Fig. 8.

Fig. 7.



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UNITED STATES PATENT OFFICE

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SHOE

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Application June 26, 1939, Serial No. 281,250

1 Claim. (Cl. 36—3)

The present invention relates to improvements in shoes and relates more particularly to a shoe which is not a turned shoe, the chief advantages being that the improved shoe produces comfort and flexibility.

Another object of the invention is to provide an improved interior shoe construction in which comfort of the wearer will be promoted by an air cushion afforded for the support of the foot, such an arrangement also conferring upon the shoe a flexibility that is unknown to shoes heretofore, particularly to ladies' shoes.

A further object of the invention is to provide an interior shoe arrangement in which air pockets and air spaces will be provided for the support and comfort of the foot, and in which a composite insole construction is involved that produces a springy support for the foot and is adapted also to exclude wet and moisture.

A still further object of the invention resides in providing an improved shoe that lends itself readily to ventilation and in which the ball and toe portion of the leather insole may be readily flexed out of the upper during periods of nonwear in order to allow of the accessibility of the outside ventilating atmosphere to the innermost portions of the shoe beneath such leather insole.

The invention also aims to provide for the ready evaporation of perspiration or moisture getting into the shoe construction below the leather supporting insole.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claim appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views.

Figure 1 is a top plan view, with parts broken away and parts shown in section, of an improved shoe constructed in accordance with the present invention.

Figure 2 is a longitudinal vertical section taken along the line 2—2 in Figure 1.

Figure 3 is a cross section taken on the line 3—3 in Figure 1.

Figure 4 is an enlarged sectional view of the left hand portion of Figure 3.

Figure 5 is a perspective view of the leather insole shown from its upper side.

Figure 6 is a similar view showing the leather insole from the bottom side and with the ball and toe portion flexed to one side.

Figure 7 is a perspective view of the canvas insole taken from its upper side, and

Figure 8 is a perspective view of the rubber filler.

Referring more particularly to the drawings 10 designates generally the leather upper of a ladies' shoe and 11 the canvas lining usually found associated with such uppers.

The outsole is indicated at 12 at the toe and ball portion of the shoe. The shank of the shoe is represented at 13 and the heel at 14; the quarter of the shoe being represented at 15.

In accordance with the invention a rubber filler 16, shown more particularly in Figure 8, is cemented or otherwise affixed directly to the outsole 12. This rubber filler 16 extends only in the toe and ball portions of the shoe. Its length is indicated in Figure 2. It does not extend in the shank portion 13 or in the heel of the shoe.

By an inspection of Figure 3 the relative width of the rubber filler 16 with respect to the outsole 12 is made clear. Also in Figure 4 the rubber filler 16 is shown as terminating laterally quite a distance from the lateral adjacent edge of the outsole 12 in order to afford space beyond the edge of the rubber filler 16 in which the secured terminal end portions 17 and 18 may lie, the terminal end portion 17 being upon the lining 11 and the terminal end portion 18 being turned down from a canvas insole 19. At 20' is shown the fastening means by which the terminal ends 17 and 18 are secured together.

The canvas insole 19 is shown more particularly in Figure 7 to be of the full length of the shoe involving a shank portion 20 and a heel portion 21. In the shank portion 20 and the heel portion 21 this canvas insole may be secured in the shoe as by cementing or otherwise. The toe and ball portion 19 has the downturned edge 18 heretofore referred to secured by fastenings 20' to the lining edge 17.

As shown in Figure 7 the toe and ball portion of the canvas or lower insole is traversed laterally or rather diagonally by a number of slits or serrations 22 which serrations terminate short of the marginal edge portions of this part of the lower insole.

These serrations divide the toe and ball portion of the lower insole into a number of adjacent and substantially parallel strips 23, each strip being unattached either above or below but only at the margin or side edge portions thereof. This is the purpose of having the toe and ball portion 19 of this lower insole secured by the downturned edges 18 only, leaving the entire flat portion of this insole free of any attachment and resting freely upon the resilient filler 16. The ribbons

or strips 23 are individually movable independently of one another up from the filler 16 on which they rest and this arrangement provides not only a flexible support for the lower insole upon the rubber filler 16 but also for great freedom in circulation of air through the slits 22 and beneath the ribbons or strips 23.

It will be noted, particularly from Figure 4, that the arrangement is such that the lower insole 19 is supported at substantially a horizontal alinement or level with the adjacent part of the lining 11 where it comes down to meet with such lower insole. Therefore, the upper insole, the toe and ball portion of which is represented at 24 may be made of sufficient lateral span or width to extend over the joint between the lining 11 and the lower insole 19 and to conceal this joint and the fastenings 20' and to elevate the foot from contact with such joint and fastenings.

This upper insole, preferably of leather, is shown in Figures 5 and 6 and it is of a composite construction consisting of the ball and toe portion 24 extending off the shank portion 25 which adjoins the heel 26.

In Figure 5, which shows a top view of the upper insole, the shank and heel portion are shown of duplex thickness having an upper layer 27 which, however, terminates at the shank portion and does not extend into the toe and ball portion. This upper layer 27 may be stitched or otherwise secured to the lower lamination comprising parts 25 and 26. Lines of stitching are indicated at 28 and 29.

As shown in Figure 6 the toe and ball portion 24 is severed partially at points 30 and 31. These cuts extend from the outer edges of the leather inwardly but an unsevered central neck 32 is left forming the only point of connection between the ball and toe portion 24 and the shank portion 25. This narrow central neck 32 forms a flexible hinged joint which is disposed opposite the open mouth of a notch 33 made in the forward central portion of the upper layer 27. This notch is substantially V-shaped with the wider portion of the V open and with the apex of the V rounded off so as to provide a relatively large crotch portion.

Comparing Figures 5 and 6 it will be apparent that the cuts 30 and 31 are made substantially coincident with the straight shoulders 34 and 35 flanking the notch 33 and being substantially transverse of the shoe or at right angles to the shoe length.

The toe and ball portion 24 of the upper insole is pierced by a number of perforations 36 which are grouped together more closely preferably at the toe or tip portion of the shoe. These perforations add to the flexibility of the upper insole, aid the ventilation and will carry vapor and moisture.

As shown in Figure 6 the toe and ball portion 24 of the top insole is slashed or partially cut along lines 37 which are transverse or diagonal to the shoe, the purpose of this construction being to add flexibility to the upper insole which is desirable in a composite insole such as herein shown and described.

The upper insole is unsecured to the sole throughout its toe and ball portion 24 but the heel portion may be nailed down as indicated by the nails 38 in Figure 1; and at the shank of the shoe the composite or double layer upper insole may be cemented or otherwise affixed thereto. At the shank of the shoe there may be provided a metallic shank stiffener 39 as shown in Figures 1 and 2.

In the use of the device, the inner shoe construction is composed of the two insoles, the filler 16 resting upon the sole 12 and supporting the lower insole 19 and the upper insole 24. Thus the foot or the ball or toe portion thereof is received directly upon the upper insole and supported thereby, the weight devolving through the lower insole 19 to the lower rubber or resilient filler 16 and thus to the leather outsole 12.

The rubber filler 16 resiliently supports the foot and also excludes moisture and lends flexibility to the shoe.

Flexibility is also acquired in the shoe by the slits 22 of lower insole 19 and by the slashings 37 and perforations 36 of the upper insole.

Also air, vapor and moisture may be accommodated in the slits 22 and in and about and beneath the strips 23 and in the perforations 36 and thus the insole construction affords pockets for a large volume of air, thus forming in effect an air cushion in addition to the rubber cushion for supporting the foot of the wearer, all to the comfort of the foot.

Now when the shoe is removed from the foot it is a simple matter to draw out the toe and ball portion 24 of the upper insole. By inserting the hand in the shoe and underneath one lateral edge of this toe and ball portion 24, the same may be lifted from the lower insole and buckled up in the center about the neck or tongue 32 which is its only point of attachment and that a very narrow one. As it is buckled up centrally the outer free toe portion can be slid backwardly along the shoe until it clears the upper. Then the portion 24 may be moved laterally as indicated in Figure 6 with one severed end portion 31 riding up over its shoulder 34. The narrow neck 32 permits the part 24 to be turned at substantially right angles when the free toe portion thereof is slid sufficiently far back in order that the edge portion of the part 24 may be drawn outwardly from beneath the upper of the shoe as it is much easier to draw the part 24 out edgewise than it would be to draw it out flatwise with both of its side edges clinging to the narrow upper of the shoe. Thus the narrow neck 32 forms a substantially central and narrow flexible hinge which allows the free part 24 to be flexed upwardly and laterally in either direction and the cutting away portions 30 and 31 allow of this flexibility and also permit adjacent portions of the part 24 to slide over the shoulders 34 and 35 which are cut away at right angles in order to avoid interference with the flexing and the turning of the unsecured part 24.

Thus the part 24 may be easily and quickly pulled out of the shoe and drawn completely back so that when the shoe is removed at night it may be ventilated thoroughly and all the moisture along the part 24 and in the perforations 36 may be evaporated and subject to the passage of the surrounding air; and the air may have free access to the slits 22 and to the spaces beneath the strips 23 of the lower insole. In this manner the shoe may be rapidly and thoroughly ventilated and dried out.

The part 24 may be easily and quickly reinserted in the shoe when the shoe is again to be put on.

It will be appreciated from the foregoing that the invention provides in a shoe construction that is not a turned shoe an improved compound inner sole construction which produces comfort

and flexibility and the advantages of a very complete ventilation.

Although the invention has been shown and described more particularly in connection with ladies' shoes, it will be appreciated that the improvement is equally applicable to men's and to children's shoes.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claim.

What is claimed is:

In a shoe, an inner sole construction comprising a bottom rubber filler, a canvas lower insole resting freely and without attachment upon the rubber bottom filler and having substantially transverse slits extending thereacross all the way through said lower insole except in the margin portions thereof whereby to provide independently movable strips between said slits unattached to said rubber bottom filler, means for securing said lower insole to the shoe structure only at the margin portion thereof, and an upper insole composed of a shank portion secured to the shoe structure and an unsecured ball and toe part, a narrow intermediate neck between the secured shank portion of the upper insole and the free toe and ball portion thereof with laterally incised portions of the upper insole at opposite sides of said neck, the free toe and ball part having perforations therein and freely resting upon the lower insole and being removable therefrom using said neck as a hinge.

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