

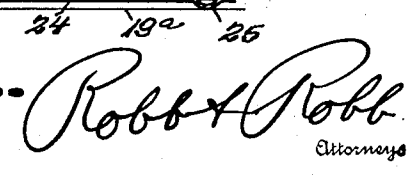
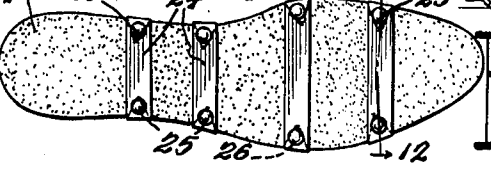
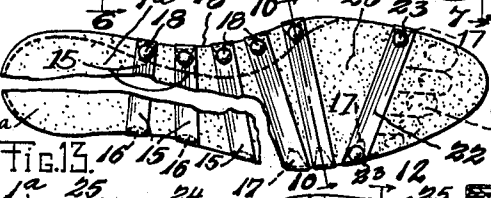
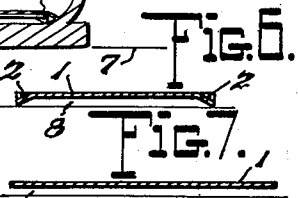
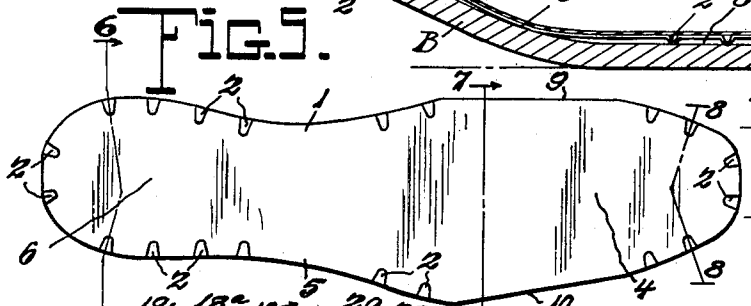
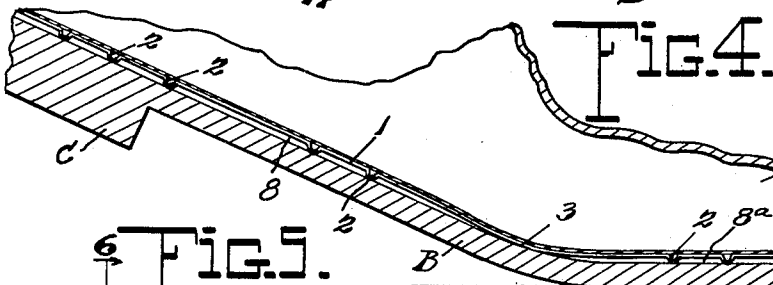
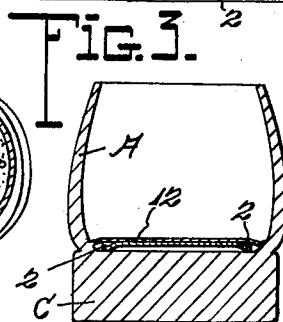
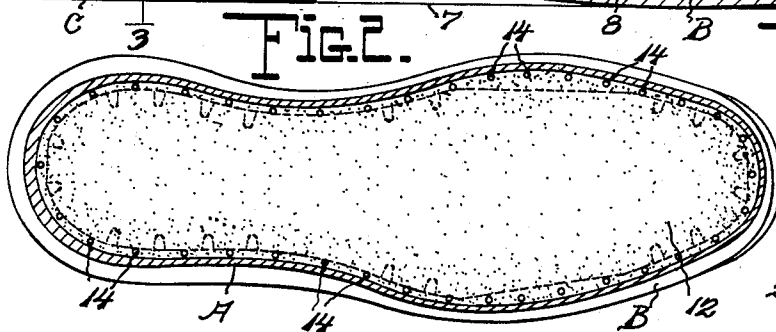
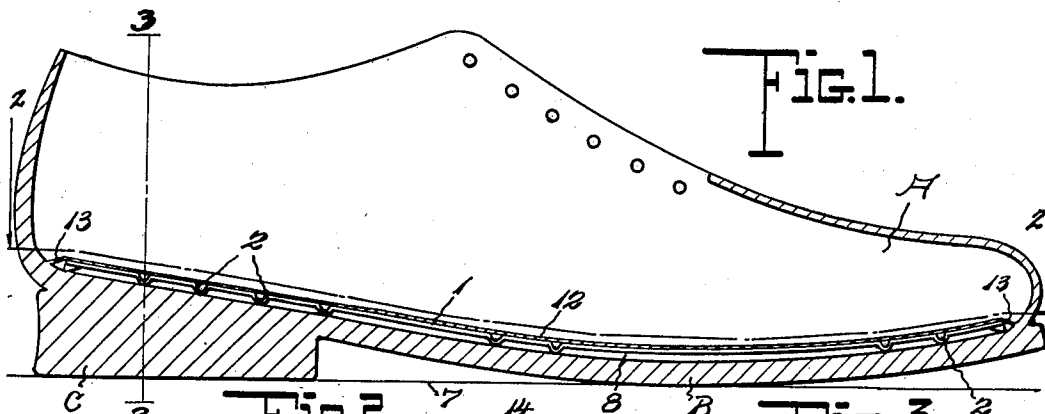
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SHOE VENTILATOR

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SHOE VENTILATOR

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11 Claims. (Cl. 36—3)

For the promotion of foot comfort, various means have been proposed for ventilating shoes, whereby the foot of a wearer may be brought into contact with the air, whereby the heating effect produced by the shoe is lessened. This ventilation is usually accomplished by the provision of apertures in the shoe, which allow direct contact of the foot of a wearer with the air.

The present invention, however, provides an improved ventilating means for a shoe which avoids the necessity of providing ventilating openings in the shoe, and thus maintains the shoe weather-tight, and does not in any way mar the appearance of the shoe or lessen the protection which the shoe affords to the foot.

Generally described, the present invention comprises a plate in the nature of an insole, generally shaped to fit the inner contour of the shoe, and adapted as indicated, to be worn inside the shoe next to the sole. The plate may be either a thin plate of flexible metal, or flexible leather suitably reinforced for springiness, the plate being provided with means for spacing it away from the sole of the shoe so as to leave an air space between the plate and sole, the ventilation being obtained through the circulatory action of the plate under the influence of the motion of the foot of the wearer of a shoe when walking, the flexibility of the shoe under such motion being such as to draw fresh air into the shoe and expel foul air from the shoe. This action will be explained more in detail hereinafter, and it will be obvious that the invention may take many different forms.

The invention will be more readily understood by referring to the accompanying drawing, in which

Figure 1 represents a vertical longitudinal section through a shoe provided with an improved plate or insole constructed in accordance with this invention and showing the shoe in normal resting position on the floor.

Figure 2 is a bottom sectional view of a shoe provided with a plate constructed in accordance with this invention, the view being taken on the line 2—2 of Figure 1.

Figure 3 is a sectional view on the line 3—3 of Figure 1.

Figure 4 is a fragmentary sectional view showing the position of the shoe during the process of walking and showing the position which the plate assumes when the wearer's foot is leaving the ground upon the beginning of a step.

Figure 5 is a plan view of a plate or insole embodying the features of the present invention.

Figure 6 is a sectional view along the line 6—6 of Figure 5.

Figure 7 is a sectional view along the line 7—7 of Figure 5.

Figure 8 is a view along the line 8—8 of Figure 5.

Figure 9 is a bottom view of a modified form of plate showing the position of the foot relatively thereto.

Figure 10 is a section on the line 10—10 of Figure 9.

Figure 11 is a view similar to Figure 9 but showing a still further modification.

Figure 12 is a section on the line 12—12 of Figure 11.

Figure 13 shows another modification, similar to the construction illustrated in Figure 9.

Referring more particularly to the drawing, the shoe A is represented as having the sole B and heel C. Within the shoe there is positioned the plate 1 which may be of metal, or equivalent material, which plate serves as an insole, and is freely flexible across its width.

This plate 1 is provided with a plurality of projections 2 projecting from the bottom surface of the plate, and being distributed along each side of the plate, there being substantial spaces between each series of projections to afford free transverse flexibility across the entire width of the plate, so that it will freely bend under the pressures exerted thereon by walking. An example of this flexibility is shown by the bend at 3 in Figure 4, which shows the position of the shoe at the completion of a step while the wearer of the shoe is walking. These projections are generally conical in form, and maintain the device substantially spaced away from the bottom of the shoe while being worn. It will be seen, however, that during walking the weight of the wearer is concentrated largely on the point 3, which causes the plate to bend and contact with the sole B of the shoe. The force exerted by the weight of the wearer on the plate is downward and forward in the position shown in Figure 4, which causes ejection of foul air from beneath the plate forwardly of the plate, and draws in fresh air around the heel of the shoe to replace the air expelled. In other words, the walking motion sets up a circulatory action of air through the bending of the plate 1, and produces a sort of pumping action set up by the plate 1.

It will be observed generally that the projections are located where there is a minimum of weight carried by the plate, the foot pressing

against the plate 1 principally in the areas indicated by 4, 5, and 6.

The floor line is indicated at 7, and the plate of the sole is indicated at 8 in Figures 6, 7, and 8, which figures clearly show the spacing of the plate 1 above the plan of the sole.

It will be seen that the sides of the plate 1 are cut substantially straight along the lines 9 and 10, it being found that making these straight cuts prevents kinking of the plate by the pressure of the toes of a wearer during walking. If the plate extends out to the full width of the shoe, it is found that there is a likelihood of the plate kinking or buckling under the action of the toes during walking. By lessening the width of the plate at the areas corresponding to that beneath the ball of the foot, this kinking or buckling is avoided.

The type of device illustrated in Figures 1 to 10 may be conveniently made of a thin sheet of metal, freely flexible and of non-corrodible properties.

It may also be noted at this point that the space 8 between the wall B and the plate 1 has a three-fold function, that is, it enables the plate to bend under the pressure of the foot when the wearer is walking, it forces the air out of the opening in the space 8a between the ball of the foot and the toes when the foot contacts with the ground in walking, and when the pressure of the foot is released, the springiness of the plate 1 returns the plate to its original position, thus filling the space 8 again with fresh air drawn from the heel end of the shoe.

In Figure 1 the plate 1 is shown as provided with a leather covering 12, which covering is integral with the shoe, and is provided with holes 13 and 14 punched through the covering 12 outside of the ventilating plate, so as to expel and receive the air in the manner already described.

In the form of invention shown in Figures 9 to 12 and 13 inclusive, the plate 1 is replaced by the flat leather member 1a, which serves as a flexible plate or insole, and which is provided with flexible reinforcing metal strips 15 extending transversely across the bottom of the leather insole 1a, and bent over the top of the insole. The projections bent over the top of the insole may be rounded as shown at 16, or pointed as indicated at 17. It will be seen from the contour of the foot of the wearer indicated in dotted lines in Figure 9, that the strips 15 are provided over the areas where the least pressure is sustained by the foot. However, the projections 18, which support the plate 1a of leather, out of contact with the sole 19, are positioned where virtually no weight is sustained by the plate. This means that the plate 1a is always spaced from the sole 19 as is indicated in Figure 10. These strips assure the desired springiness to return the insole 1a to its original position at all times, while imparting to the insole 1a an action entirely similar to that of the plate 1. It will be found that between the ball 20 of the foot and the toes 21 there is a region where there is no substantial application of weight of the foot, and across this area is positioned the resilient metal strip 22 having the projections 23 adjacent each end thereof. The action of the plate is similar to that previously described.

In Figure 11 there is shown a still further modification of the invention, wherein the strips 15 are replaced by the parallel spaced strips 24, which strips have the projections 25 adjacent each end thereof, for normally holding the leather

plate 1a parallel with the sole 19a, these strips 24 being positioned at the areas about which the pressure of the foot of the wearer is not so great. The action of this form of the invention is similar to that previously described. These strips 24 are bent over the insole, and are bent and clamped into position as indicated at 26.

In Figure 9 the curvature of the portion 18a, corresponding to the instep of the foot, is substantially a circular arc, the strips 18 being radially disposed from the center of curvature of the arc. It will be seen that the front strip of the series of strips is located back of the bearing of the toes, or ball of the foot, and the last strip of the series is placed ahead of the heel bearing, so that the series of strips is located intermediate the ball of the foot and the bearing of the heel.

In Figure 11, the strips are placed in a substantially parallel relation, and it will be understood that the arrangement of the projections 18 and 25 of Figures 9 and 11 may be interchanged without affecting the general operativeness of the construction.

As shown in Figure 2, the ventilating holes extend all around the insole member 1, as indicated at 14.

It is evident that by the construction of my peculiar form of insole according to the foregoing description, an air space is provided between the heel portion of the insole and the portion upon which rests the anterior metatarsal arch of the wearer's foot so that in the use of the shoe the air circulating action previously set forth is obtained for ventilating purposes.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is—

1. A ventilating insole member for shoes comprising a flexible flat member adapted to be inserted in a shoe, and a plurality of projections extending from the member to the bottom of the shoe for maintaining the flat member in spaced relation relatively to the bottom of the shoe forming an air space therebetween, the said member being freely yieldable to contact with the bottom of the shoe under pressure of the foot of the wearer, thereby expelling air from a portion of the air space while drawing air into the remainder thereof to produce a circulation of air through the shoe, the said member being of the same general configuration as the inside of the shoe but having its edges cut substantially straight on each side adjacent the portion of the member corresponding to the ball of the foot, to thereby prevent warping of the member during walking.

2. A ventilating insole member for shoes comprising a flexible plate of comparatively thin metal adapted to be inserted into a shoe and removable therefrom and formed to substantially correspond to the interior contour of the shoe, the said plate being cut substantially straight along the edges thereof adjacent the position corresponding to the ball of the foot, said plate being provided with portions struck downwardly affording projections spacing portions thereof from the bottom of the shoe on which it rests.

3. An insole member for shoes comprising a flat, freely flexible body of comparatively thin material, resilient reinforcing strips extending beneath the said body and having projections spacing the said body from the bottom of the shoe.

4. An insole member for shoes comprising a flat, freely flexible body of comparatively thin mate-

rial, resilient reinforcing strips extending transversely of the said body, and projections at one of each of the said strips spacing the said body from the bottom of the shoe.

members extending transversely across the said body and located at areas of least pressure on the body when in use, and means for yieldingly spacing the said body from the bottom of the shoe in which it is inserted.

5 5. An insole member for shoes comprising a flat, freely flexible body of comparatively thin material shaped to conform to the inner configuration of the shoe, a plurality of resilient reinforcing strips extending transversely across the said body, the said strips being positioned between the ball of the foot of a wearer of the shoe, and the heel thereof, the said strips extending radially across the said body, and means for yieldingly spacing the body from the bottom of the shoe.

9. An insole member for shoes comprising a flat, freely flexible leather body, a plurality of resilient metallic strips extending across the body in substantially parallel relation, the said strips being positioned on the body at areas of least pressure on the body when in use, and projections on each end of each strip for yieldingly spacing the body from the bottom of the shoe in which it is inserted.

15 6. An insole member for shoes comprising a flat, freely flexible body of comparatively thin material shaped to conform to the inner configuration of the shoe, a plurality of resilient reinforcing strips extending transversely across the said body, the said strips extending radially across the said body, the strips being positioned between the ball of the foot of a wearer of the shoe and the heel thereof, an additional strip extending across the said body between the ball of the foot of the wearer and the toes thereof, and a projection at one end of each strip for yieldingly spacing the said body from the bottom of the shoe.

10. As a new article of manufacture, an insole member for a shoe comprising a substantially flat, flexible section of leather, adapted to be positioned in the shoe, and resilient metallic means secured to the said section and provided with parts to space the same from the sole of the shoe and arranged to engage the said sole of the shoe at the ends, the central portion of the insole providing therebeneath an air space located between the heel and the anterior metatarsal arch of the wearer's foot.

30 7. An insole member for shoes comprising a flat, freely flexible body of leather, a plurality of resilient reinforcing metallic strips extending transversely across the body, and means on the strips for yieldingly spacing the leather body from the bottom of the shoe in which the insole member is inserted.

11. As a new article of manufacture, an insole member for shoes providing a flat, freely flexible body combined with a resilient member secured to said insole and having spacing parts projecting downwardly therefrom to space it from the sole of the shoe in which it is located, the said spacing parts being located adjacent to the heel and adjacent to the metatarsal arch portions of the foot resting upon the insole member whereby to form an air cavity between the heel and said metatarsal arch portions for the purpose described.

35 8. An insole member for shoes comprising a flat, freely flexible body adapted to be inserted in a shoe, a plurality of resilient reinforcing

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