March 21, 1939. W. A. RIESS 2,151,152

FOOTWEAR VENTILATION

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Fig. 1.

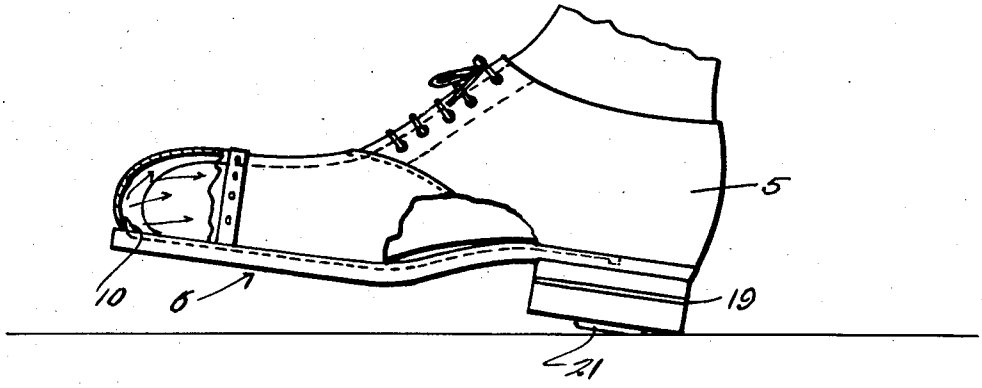


Fig. 2.

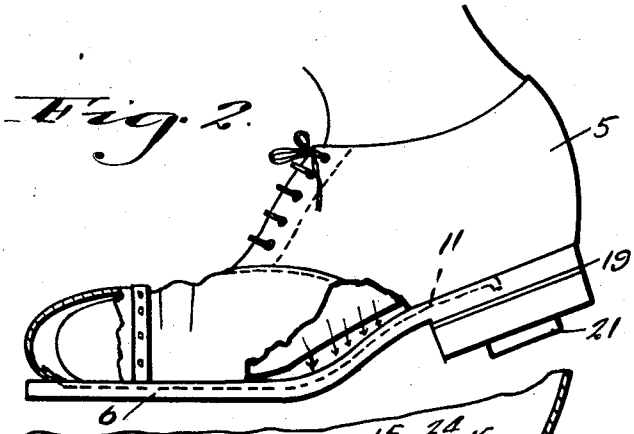
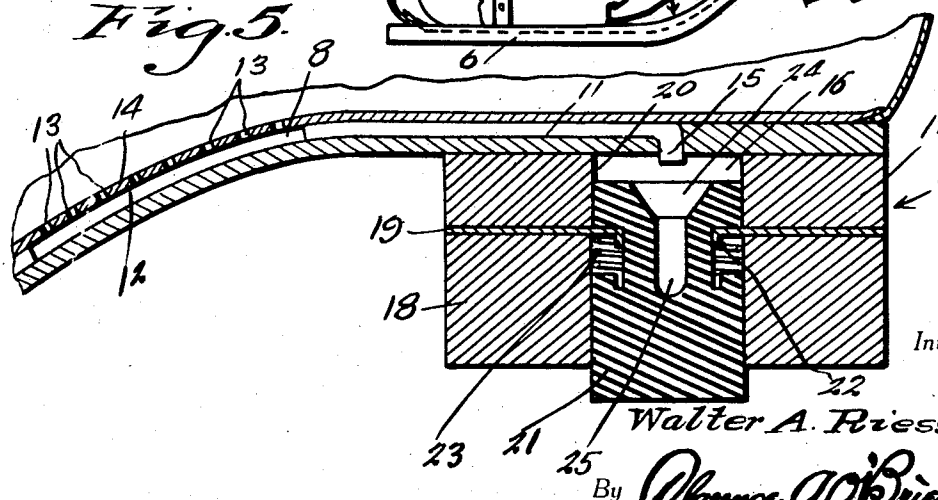


Fig. 5.



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Fig. 3.

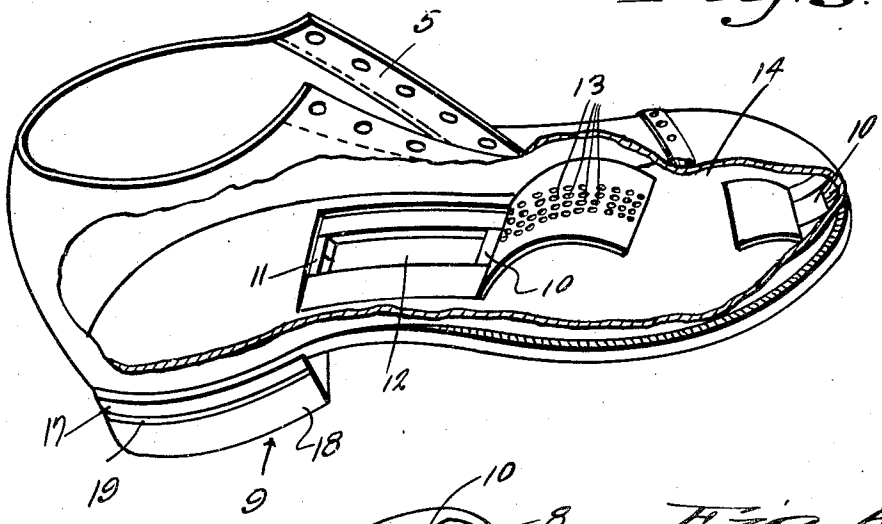


Fig. 4.

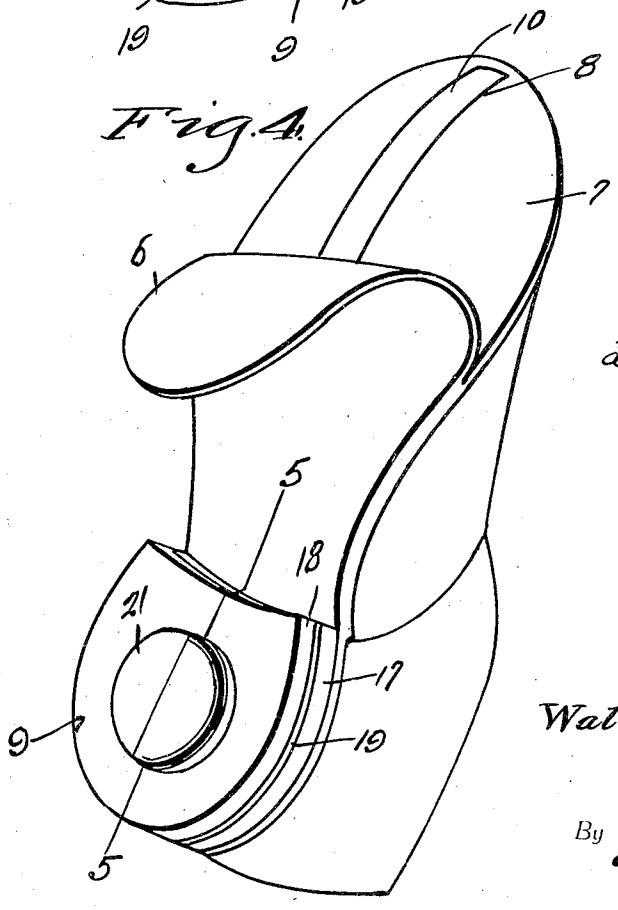
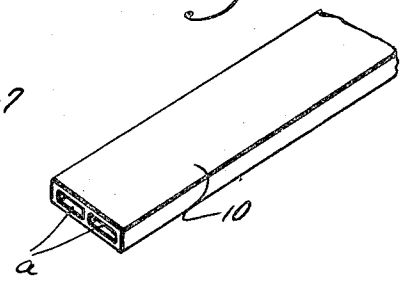


Fig. 6.



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UNITED STATES PATENT OFFICE

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FOOTWEAR VENTILATON

Walter A. Riess, Chicago, Ill.

Application August 2, 1937, Serial No. 157,035

1 Claim. (Cl. 36—3)

This invention appertains to new and useful improvements in means for ventilating footwear.

The principal object of the present invention is to provide a shoe construction in which ventilation will be automatically promoted as the shoe is being worn.

Another important object of the invention is to provide a shoe construction wherein the heel is constructed in such a manner as to pump air into the lower portion of the shoe for ventilating and refreshing the wearer's foot.

Another important object of the invention is to provide ventilating means for shoes which will in no manner detract from the practicability of the shoe.

These and various other objects and advantages of the invention will become apparent to the reader of the following specification.

In the drawings:

Figure 1 is a side elevational view of the shoe as the wearer is about to impose his weight on the heel thereof.

Figure 2 is a side elevational view of the shoe as the wearer shifts his weight forwardly on the shoe.

Figure 3 is a perspective view of the shoe with parts broken away to disclose the air line.

Figure 4 is a perspective view showing the lower portion of the shoe with the outer sole pulled away to disclose the air conduit.

Figure 5 is an enlarged fragmentary longitudinal sectional view through the heel and arch portion of the shoe.

Figure 6 is a fragmentary perspective view of the air conduit.

Referring to the drawings, wherein like numerals designate like parts, it can be seen that the numeral 5 represents the shoe proper while numeral 6 represents the outer sole and numeral 7 the inner sole.

The inner sole 7 is provided with a slot 8 which extends from the forward end thereof to a point over the mid-portion of the heel generally referred to by the numeral 9.

In this slotway 8 are two conduit sections, the forward conduit section 10 and the rearward conduit section 11, these sections each being provided with a pair of ducts *a*—*a* therein. These conduit sections are furthermore aligned but terminate at their inner ends in spaced relation to define the air chamber 12 just beneath the rows of perforations 13 in the arch portion of the shoe liner 14.

The rear end of the conduit section 11 is curved downwardly as at 15 and communicates with the air chamber 16 in the leather section 17 of the heel structure 9.

Numeral 18 denotes the cushion or rubber heel section and between the sections is the thin plate 19, preferably of aluminum which has an opening in the central portion thereof smaller than the bore 20 which forms the chamber 16 and which forms the slideway for the resilient plunger 21.

The plate 19 at the edge portion of its opening has a downwardly disposed flange structure 22. Furthermore, the intermediate portion of the plunger body 21 is reduced to define upper and lower shoulders. The upper shoulder rests upon the edge portion of the plate 19 in the said opening and a coiled compressible spring 23 is disposed between this edge portion of the plate and the lower shoulder of the plunger 21 for normally tending to urge the plunger downwardly in the position shown in Figure 5.

The upper portion of the plunger 21 is provided with the funnel-shaped opening 24 merging with the short bore 25 extending about halfway through the plunger 21.

It can now be seen that as the wearer allows his weight to settle on the heel, as shown in Figure 1, air will be forced from the chamber 16 by the plunger 21 and through the conduits 11 and 10 to the toe portion of the shoe, as shown in Figure 1. The air will ventilate the forward portion of the shoe, and as the wearer in continuing his step swings his weight to the ball portion of the foot and lifts his heel from the ground, the action of the plunger 21 being forced outwardly by the spring 23 will create a suction in the chamber 16 which will draw the air over the top portion of the foot and around under the arch or instep portion (which portion has now become spaced from the perforated portion of the insole 14), and through the perforation 13 to the chamber 12 and from there back to the conduit 11 and to the chamber 16.

Obviously, fresh air will be drawn in around the ankle portion of the shoe, as some of the hot air will be lost in these cycles of operation.

Furthermore, it will be observed that the provision of this heel construction will afford a cushioning effect much more appreciable than the usual rubber heel construction.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size, and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

A shoe heel construction comprising superimposed heel sections having vertically arranged aligned bores, with the upper section secured on a shoe upper to close one end of the bore thereof, a rigid plate interposed between said sections and projecting into the bores and having an opening of a diameter smaller than the diameter of said bores to provide a combined guide and stop, a plunger having a slidable fit with said bores and having an annular reduced portion slidable in the opening of the plate and providing spaced shoulders arranged above and below the plate for limiting the sliding movement of the plunger in the bores, a coil spring surrounding the plunger and bearing against the plate and one of the shoulders for normally urging the other shoulder into engagement with the plate and one end of the plunger outwardly of the bore of one of the sections to contact the ground in advance of the latter-named section contacting the ground, and means connecting the bore of the other section to the inside of the shoe upper.

WALTER A. RIESS.