Jan. 7, 1930. J. LANGAN ET AL. 1,742,772

VENTILATED SHOE SOLE

Filed July 12, 1928

FIG. 1.

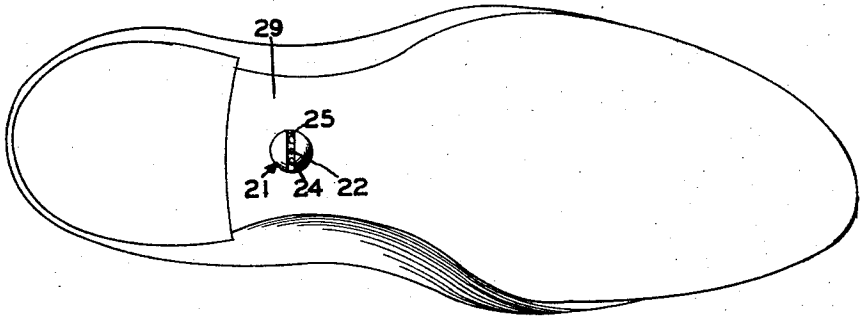


FIG. 2.

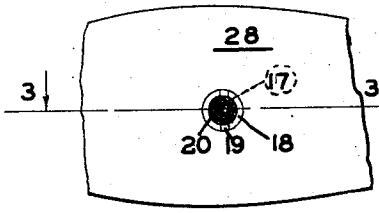


FIG. 4.

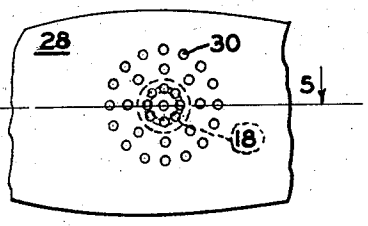


FIG. 3.

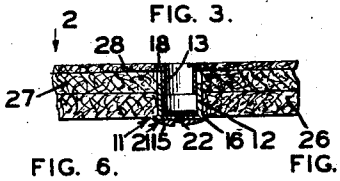


FIG. 5.

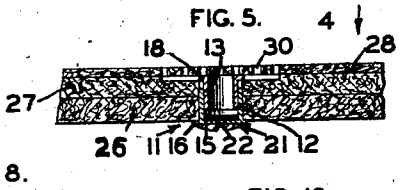


FIG. 6.

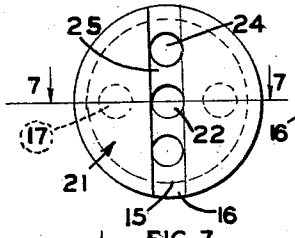


FIG. 8.

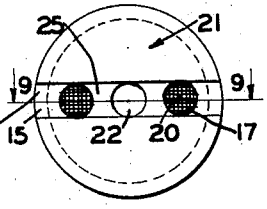


FIG. 10.

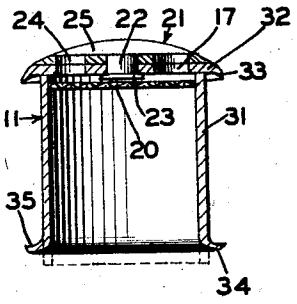


FIG. 7.

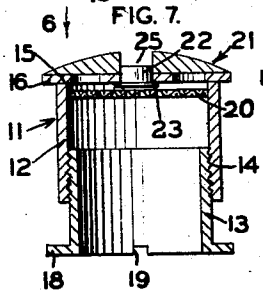
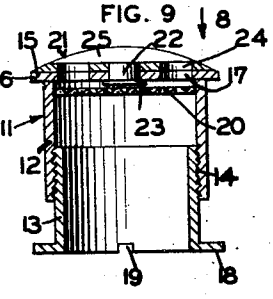


FIG. 9



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UNITED STATES PATENT OFFICE

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VENTILATED SHOE SOLE

Application filed July 12, 1928. Serial No. 292,059.

Our invention is a ventilated shoe sole adapted to provide ventilation through the sole of a shoe at the arch.

An object of our invention is the construction of a ventilated shoe sole positioned in the sole at the arch of a shoe so that the action of a person's foot in walking creates a pulsation of air through ventilating openings and thereby functions to ventilate the interior of the shoe.

Another object of our invention is the construction of a ventilating shoe sole which may optionally be utilized in a manner to ventilate the shoe, or in which the ventilating device may be closed; and a further object of our invention is to provide a simple device which may be actuated from outside of the shoe to act as a ventilator or as a non-ventilator.

A more detailed object of our invention is the construction of a shoe sole with a hole or opening therethrough, preferably at the arch, and with a tube fitted in this opening, this tube having a valve structure which may be opened or closed from outside of the shoe to allow ventilation or non-ventilation. In detail we prefer to form the valve by having a closure plate on the tube with perforations therethrough; and on the outside to have a rotatable disc with perforations which may be aligned with the perforations in the plate and thus give ventilation, or the disc may be shifted in another position to prevent a circulation of air.

In constructing our invention the tube may be made in inner and outer parts if desired, screw threaded together and fitted from the outside and inside of the shoe, the ends of the tube having flanges to limit the movement of the separate parts of the tube. In another form of our invention the tube may have a flange at one end and be pressed through the opening in the sole and then have the other end spun or expanded over the inner part of the shoe in the form of a tubular rivet with the valve structure on the outside.

On the inside of the shoe we may have the tube extending through the insole and outsole, or we may have it terminate under the inner sole and have this inner sole perforated.

Our invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a view of the sole of a shoe with our ventilator fitted therein,

Fig. 2 is an inside view of a shoe and of the ventilator fitting taken in the direction of the arrow 2 of Fig. 3, showing the ventilating device extending through the inner sole,

Fig. 3 is a longitudinal section on the line 3—3 of Fig. 2 in the direction of the arrow,

Fig. 4 is a plan of a modification taken in the direction of the arrow 4 of Fig. 5, in which the ventilating device terminates underneath the inner sole which is perforated,

Fig. 5 is a section on the line 5—5 of Fig. 4 in the direction of the arrow,

Fig. 6 is a plan of the outside of the ventilator taken in the direction of the arrow 6 of Fig. 7, showing the ventilator closed,

Fig. 7 is a section on the line 7—7 of Fig. 6,

Fig. 8 is a view similar to Fig. 6 with the ventilator open,

Fig. 9 is a section on the line 9—9 of Fig. 8,

Fig. 10 is a vertical section through a modification in which the ventilator is made in the form of a tubular rivet with the valve constructed thereon.

In constructing the ventilator we utilize a tube designated generally by the numeral 11 (note particularly Figs. 6 through 9). This tube has an outer section 12 and an inner section 13 connected by a screw threaded connection 14 to allow threading adjustment of the two sections. The tube 12 has a headplate 15 with an outwardly extending flange 16. Such plate also has a plurality of perforations 17 therethrough. The section 13 is also provided with an outwardly extending flange 18 and with a screw-driver kerf 19. A wire gauze 20 is preferably fitted inside of the section 12 of the tube, fitting closely adjacent the headplate 16.

Mounted on the headplate there is a valve disc 21. This has a swivel pin 22 which is illustrated as riveted at 23 on the inside of the headplate 12, there being a central aperture to accommodate the pin. This valve disc has a plurality of perforations 24 adapted to register with the perforations 17 and form valve ports therethrough as shown in Figs. 8 and 9.

The disc also has a screw-driver kerf 25 so that the perforations 24 may be turned out of register with the perforations 17, thus forming a closure as indicated in Figs. 6 and 7.

The ventilator may be installed in a shoe as shown in Figs. 2 and 3 in which the outer sole 26, the middle sole 27 and the inner sole 28 have a hole therethrough, the tube 11 fitting in this hole with the flange 16 of the head engaging the outer surface of the outer sole. The flange 18 of the inner section 13 of the tube is countersunk in the inner sole 28 so that the upper surface of the flange may be flush with the upper surface of the inner sole. By this construction when the perforations 17 and 24 are in register there is a clear passage for ventilating air to pass through the sole of the shoe; and it is desirable to locate our ventilator at the arch portion of the shoe as indicated at 29.

In the construction illustrated in Figs. 4 and 5 the tube 11 is fitted in a hole through the outer sole 26 and the middle sole 27, the flange 18 engaging a countersunk portion of the middle sole 27. The inner sole 28 has a series of perforations 30 so that the air passing through the ventilator may pass through the perforations on the inner sole. This construction allows the ventilation without having the metal of the flange 18 in contact with the wearer's sock or stocking.

In the construction shown in Fig. 10 we utilize an integral tube 31 having a headplate 32 fixedly connected thereto, this headplate having a downwardly extending rim 33 adapted to bite into the outer sole. The headplate 32 and the valve disc 21 have perforations, the valve disc being mounted on the headplate in the same manner as indicated in Figs. 6 through 9; and there may also be a wire gauze inside of the tube. The inside end 34 of the tube is adapted to be flanged outwardly as indicated at 35 by a suitable riveting or spinning implement and thus engages either the inner sole as shown in Fig. 3 or underneath the inner sole as indicated in Fig. 5. With this construction the tube should be made approximately the length corresponding to the thickness through the sole, whereas in the construction of Figs. 6 through 9 the tube 11 is adjustable by having the sections 12 and 13 threading one into the other.

In the operation of our ventilator, if the pavement is dry the wearer may have the valve disc positioned so that the apertures in the headplate and in the disc are in alignment, and as in the action of walking there is an alternate suction and pressure of the sole of the foot on the arch of the shoe, this causes a pulsating movement of air through the valve ports formed by the perforations 17 and 24. If the pavement is wet the wearer may turn the valve disc 21, using any suitable implement such as the edge of a ten-cent piece or a penny until the perforations 17 and 24 are out of register, this giving a sufficiently water-tight seal to prevent entrance of water into the shoe and manifestly preventing the ventilating function.

It will be noted that a feature of our invention is the use of a screen in the tube. This is preferably made of rather fine mesh and prevents dust from passing from the pavement into the interior of the shoe; and in the action of the to and fro movement of the air caused in walking, the dust which enters and collects on the screen on the inward rush of air is blown out on the outward pulsation, therefore keeping the screen clear.

Various changes may be made in the principles of our invention without departing from the spirit thereof, as set forth in the description, drawings and claims.

We claim:

1. In a shoe ventilating device, a tube adapted to be positioned within a hole in a shoe, and comprising an exteriorly threaded portion engaged within a larger interiorly threaded portion, and a flange carried by each of said portions to engage the shoe, an apertured head carried by said larger portion, valve means associated therewith for controlling the flow of air through said tube, and a disc of foraminous material disposed within said larger portion between said head and the smaller tube portion.

2. In a shoe ventilating device, a tube adapted to be positioned within a hole in a shoe, and comprising an exteriorly threaded portion engaged within a larger interiorly threaded portion, and a flange carried by each of said portions to engage the shoe, and apertured head carried by said larger portion, an apertured closure pivoted on said head to optionally close or open the apertures in said head, and a disc of foraminous material disposed within said larger portion between said head and the smaller tube portion.

3. In a shoe ventilating device, a tube adapted to be positioned within a hole in a shoe, means for securing said tube within said hole, an apertured head extending across said tube, and an apertured plate pivoted on said head, said plate having a kerf in its outer surface, with its apertures extending through the plate from the bottom of said kerf.

In testimony whereof we have signed our names to this specification.

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HARRY GREENBERG.