July 25, 1944. W. P. SHAKS 2,354,407

VENTILATED SHOE

Filed July 13, 1943

FIG. 1

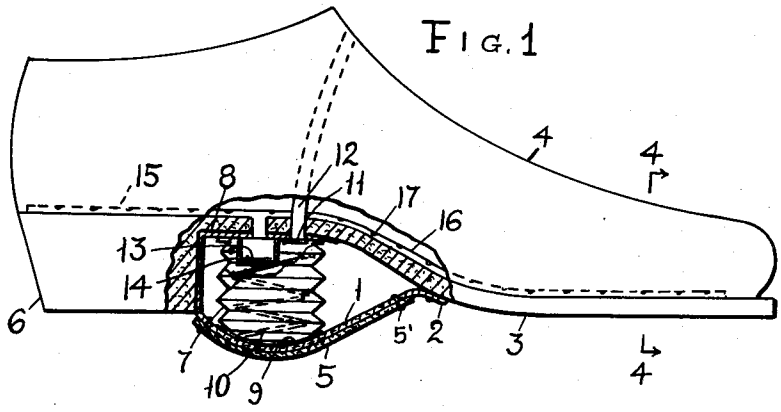


FIG. 2

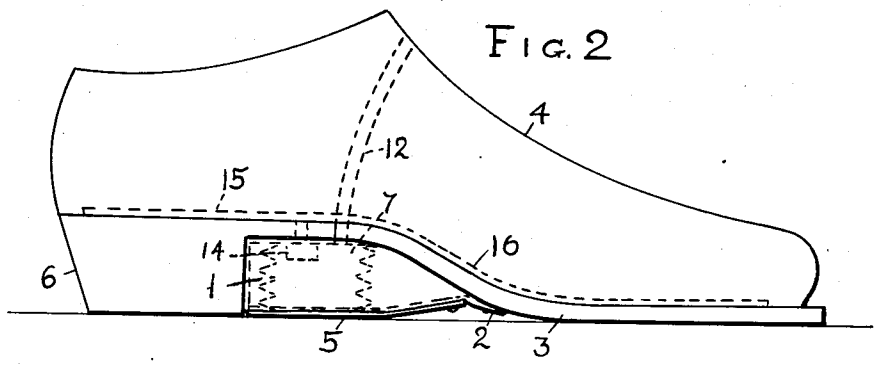


FIG. 3

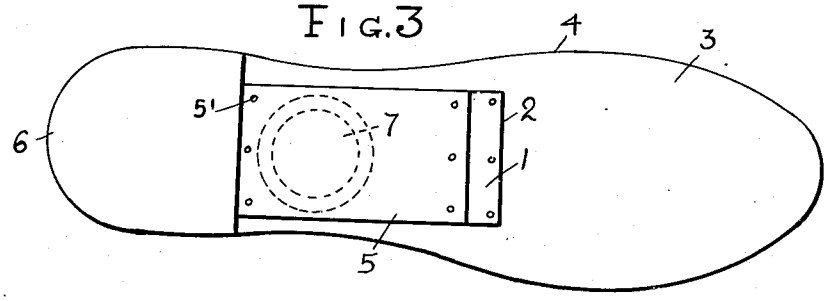
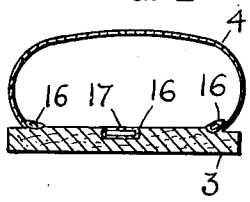


FIG. 4



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VENTILATED SHOE

William P. Shaks, New York, N. Y.

Application July 13, 1943, Serial No. 494,467

4 Claims. (Cl. 36—3)

My invention relates to ventilated shoes and has particular reference to shoes provided with pumps for blowing air through the inner portions of the shoe.

My invention has for its object to provide a shoe with a pump so that air is pumped or circulated through the spaces between the inside of the shoe and the wearer's foot with every step when shoe is in use. The shoe and the stocking are thereby maintained dry from perspiration, prolonging the life of the shoe as well as of the stockings and adding to the wearer's comfort.

I am aware that ventilated shoes with pumps have been used prior to my invention, but all such shoes had pumps inside the shoe, to be operated by the movement of the wearer's foot relatively to the shoe. Such devices proved to be impracticable since the movement of the foot in the shoe rapidly causes chafing of the foot, wear of the stockings, and uncomfortable feeling when the foot moves in the shoe. In my device I place the pump on the outside of the shoe in a flexible casing in front of the heel, the casing normally extending below the heel so that the air is pumped not by the relative movement of the foot but by the normal walking action of the foot. Moreover, the resilient casing increases resiliency of the steps, materially facilitating the walking action, being in this respect even superior to rubber heels.

My invention is more fully described in the accompanying specification and drawing in which:

Fig. 1 is an elevated view of the shoe partly in section;

Fig. 2 is a similar view of a shoe when placed on a hard surface;

Fig. 3 is a bottom view of the shoe;

Fig. 4 is a transverse sectional view of the shoe taken on the line 4—4 of Fig. 1.

My ventilated shoe consists of a housing 1 made of leather, rubberized fabric, or similar flexible material. The housing is open at the top and has a flange 2 attached to the outer side of a sole 3 of a shoe 4. The outer side of the housing has a flexible cover plate 5 made of a wear resisting material such as leather, rubber, etc. The plate is attached to the housing by rivets 5' and, when worn out can be replaced with another cover. The housing extends below a heel 6 of the shoe so that it touches the ground first, before any other portion of the shoe and, therefore, is caused to collapse by the pressure of the shoe against the pavement. This collapsing action is utilized to operate a pump in the housing. The pump consists of a collapsible tubular casing 7, preferably made of leather, rubberized fabric or similar material in the form of bellows. The walls of the casing may be corrugated or of the accordion type to facilitate collapsing movement of the casing. The walls are attached to a bottom plate 8 at one end to a top plate 9 at the outer end. A helical spring 10 is placed inside the casing for maintaining the latter in an extended position as shown in Fig. 1. An intake valve 11 is supported at the inner side of the bottom plate 8 and is connected to an intake pipe 12 extending to the top of the shoe.

An exhaust valve 13 is supported in a valve cage 14 at the plate 8 and is connected to exhaust or ventilating pipes 15, 16, extending along the upper side of the sole of the shoe and having ventilating openings 17.

The spring 10 urges the housing outward and is compressed to the level of the sole when the shoe is placed on the pavement as shown in Fig. 2. The compressing action of the shoe causes the pump to expel the air from the casing 7 into the inner portion of the shoe around the wearer's foot through the exhaust pipes 15, 16 and openings 17. When the shoe is raised from the pavement, the spring 10 moves the cover 5 outward, causes the outside air to be drawn into the pump casing 7 through the intake valve 11.

My ventilating attachment has an advantage in that its action depends entirely on the pressure of the shoe on the pavement, the shoe being of an ordinary shape inside so that the foot does not move in relation to the shoe. The resiliency of the spring 10 softens the pressure of the foot, acting as a cushion and making walking easier.

It is understod that my ventilated shoes may be further modified without departing from the spirit of the invention, as set forth in the appended claims.

I claim as my invention:

1. A self-ventilating shoe comprising an air pump; means to support the air pump on the outside of the shoe sole at the shank portion in front of the shoe heel; flexible enclosure for the pump extending below the heel, the pump being adapted to be operated when the cover is depressed to the level of the heel by the shoe being pressed against a supporting surface; a spring adapted to move the pump outward; means to admit air into the pump; and means to discharge the air from the pump into the inner portions of the shoe.

2. A self-ventilating shoe comprising an enclosure made of a flexible material fastened to the lower outer side of the shoe between the heel and

the front portion of the sole, the lower portion of the enclosure extending substantially below the heel and the sole; a pump in the enclosure; means to admit air into the pump; means to exhaust the air from the pump into the inner portions of the shoe; and a spring in the enclosure for returning the pump to its outward position thereby causing the pump to draw the air through the air admitting means, the enclosure being adapted to collapse thereby operating the pump when the shoe is placed on a supporting surface.

3. A self-ventilating shoe comprising an enclosure made of a flexible material fastened to the lower outer side of the shoe between the heel and the front portion of the sole, the lower portion of the enclosure extending substantially below the heel and the sole and adapted to be depressed by the shoe being placed on a supporting surface; a pump in form of bellows supported in the enclosure adapted to be caused partly to collapse by the collapse of the enclosure; valved means to admit air into the bellows; and valved means to exhaust the air from the bellows into the inner portions of the shoe.

4. A self-ventilating shoe comprising an enclosure made of a flexible material fastened to the lower outer side of the shoe between the heel and the front portion of the sole, the lower portion of the enclosure extending substantially below the heel and the sole; a pump in the enclosure; means to admit air into the pump; means to exhaust the air from the pump into the inner portions of the shoe; a spring in the enclosure for returning the pump to its outward position thereby causing the pump to draw the air through the air admitting means, the enclosure being adapted to collapse thereby operating the pump when the shoe is placed on a supporting surface; and a cover attached to the lower outer surface of the enclosure, the cover being made of a flexible wear-resisting material.

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