

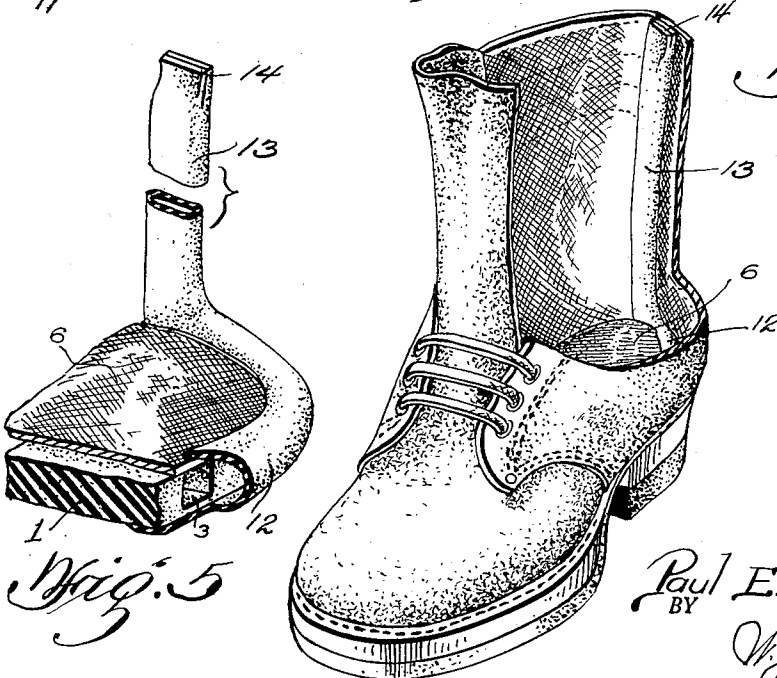
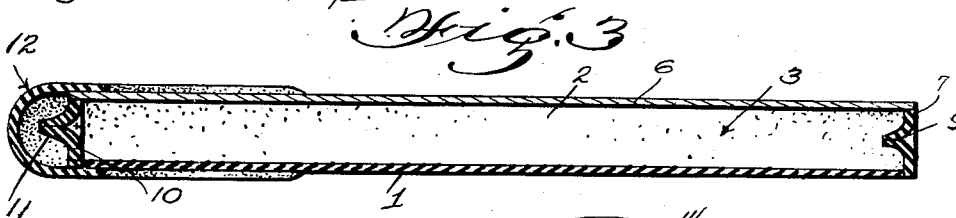
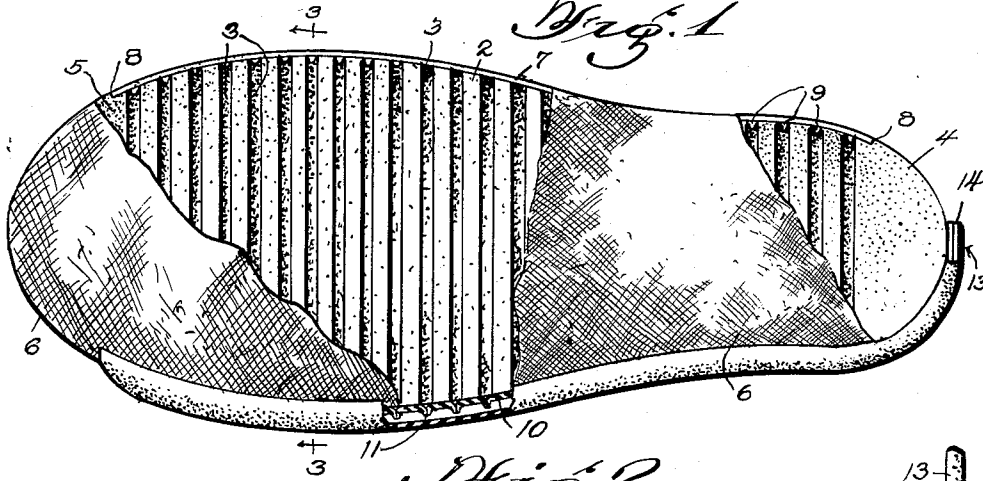
March 13, 1951

P. E. WHITTINGTON

2,545,062

VENTILATING INSOLE

Filed Feb. 20, 1948



INVENTOR.  
*Paul E. Whittington*  
BY  
*W. J. Eccleston,*  
ATTORNEY

# UNITED STATES PATENT OFFICE

2,545,062

## VENTILATING INSOLE

Paul E. Whittington, Arlington County, Va.

Application February 20, 1948, Serial No. 9,932

4 Claims. (Cl. 36—3)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

1

The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes without the payment to me of any royalty thereon.

This invention relates to shoes provided with means by which they may be ventilated, and has for its primary object to provide an insole which will operate automatically and effectively to create a circulation of fresh air within the shoe when the latter is in use.

Another object of the invention resides in the provision of an insole provided with a plurality of rectilinear air passages provided with valves which operate in the manner of a pump to circulate fresh air about the interior of the shoe when latter and the insole are in use.

A still further object of the invention consists in providing a ventilating insole of relatively simple and inexpensive construction and yet which is efficient and durable in operation.

Other objects and advantages of the invention will be apparent from the following description when considered in connection with the accompanying drawings, in which,

Figure 1 is a plan view of the novel insole with parts broken away to more clearly disclose the internal construction;

Figure 2 is an edge view, partly broken away, to show the outwardly opening check valves;

Figure 3 is a transverse sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a fragmentary perspective view of a shoe with the insole installed therein and,

Figure 5 is an enlarged fragmentary view of the rear portion of the insole.

The body of the insole may be formed of rubber or other resilient material capable of being compressed by the weight of the wearer's body so as to cause the same to function as a pump in circulating the air as more fully set forth hereinafter. In the present illustration, the body is formed of a rubber sheet or plate 1 provided with a series of transverse ribs 2 on its upper side extending from edge to edge of the insole. These ribs provide a series of transverse channels 3 which extend from edge to edge of the sheet 1, which is, of course, shaped to conform to the interior of the shoe to which it is to be applied.

The series of ribs 2 preferably terminates in spaced relation to the ends of the insole to provide plain portions 4 and 5 at the heel and toe respectively of the insole, thereby imparting some stiffness to the insole while permitting the pumping action along the ribbed portion.

A sheet of cloth or other flexible material 6,

2

also conforming to the contour of the insole body 1, is adhesively secured to the upper surfaces thereof so as to close the tops of the transverse channels 3. One edge of the insole is provided with a strip of rubber or other suitable material 7 set in a rabbeted portion 8 of the ends 4 and 5 and having its edges secured to the inner surfaces of the sheets 1 and 6. This strip 7 is provided with a series of inlet check valves 9 corresponding to the number of transverse channels 3. The opposite edge of the insole is provided with a similar rubber strip 10 in which are formed outlet check valves 11 corresponding in number to the number of transverse channels 3. It is to be noted that the channels 3 are of rectilinear formation so that corresponding inlet and outlet valves 9 and 11 are in alignment with each other so as to provide a clear passage for air being circulated about the shoe when the insole is in operation.

Inclosing the series of outlet check valves 11 is a duct or conduit 12 of substantially semi-circular contour in cross section and having its longitudinal edges secured to the upper and lower surfaces of the insole as clearly indicated in the drawings. The rear end of this conduit 12 is of tubular formation as indicated by the numeral 13 and extends upwardly at the rear of the shoe where its free end is formed into a check valve 14.

In the operation of the insole the intermittent pressure of the wearer's weight while walking will cause the resilient sheet to be alternately compressed and expanded throughout the channeled portion, thereby alternately decreasing and increasing the volumetric capacity of the transverse channels 3. These variations in pressure on the insole and the attendant variations in the volumetric capacity of the channels within the insole cause a pumping action in conjunction with the intake and outlet check valves, to provide a circulation of air about the interior of the shoe and the wearer's foot to ventilate the latter and eliminate deleterious effects often caused by excessive moisture in contact with the feet. As the channels 3 are collapsed by the pressure transmitted to the insole by the weight of the wearer's body air contained in these channels is forced outwardly through the outlet check valves 11 into the duct or channel 12 and up through the tube 13 and valve 14 to the atmosphere. When the weight is removed from the insole these channels or passageways return to their normal cross sectional area due to the resiliency of the material, thereby increasing their volumetric capacity and causing air to be drawn

3

4

in through the intake check valves 9 to supply the deficiency of air within the channels. This action is repeated throughout the period that the shoe and insole are used in walking and thus insures a continuous change of air within the shoe with a consequent cooling of the wearer's feet and a substantial reduction in the possibility of damage to the feet which otherwise often results by reason of the presence of excessive moisture.

I claim:

1. A ventilating insole comprising a body portion of resilient material having a plurality of parallel channels, inwardly-opening check valves communicating with each of said channels at one portion of the insole, and outwardly-opening check valves communicating with each of the channels at another portion of the insole.

2. A ventilating insole comprising a body portion of resilient material having a plurality of transverse parallel channels, inwardly-opening individual check valves communicating with each of the transverse channels at one end thereof, and outwardly-opening individual check valves communicating with each of the other ends of the transverse channels.

3. A ventilating insole comprising a body portion of resilient material having a plurality of parallel channels extending transversely

throughout the width thereof, means for closing the channels at each edge of the insole, and outwardly-opening and inwardly-opening check valves in said means and communicating with the respective ends of the channels.

4. A ventilating insole comprising a body portion of resilient material having a plurality of parallel channels, inwardly-opening check valves communicating with the respective channels at one edge of the insole, outwardly-opening check valves communicating with the respective opposite ends of the channels, and a duct into which said outwardly-opening check valves discharge.

PAUL E. WHITTINGTON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
452,655	Valliant	May 19, 1891
1,134,389	Lack	Apr. 6, 1915
1,260,942	Price et al.	Mar. 26, 1918
1,525,501	Gendron	Feb. 10, 1925
2,098,412	Bovay	Nov. 9, 1937
2,153,304	Gruber	Apr. 4, 1939
2,239,211	Wylie	Apr. 22, 1941