

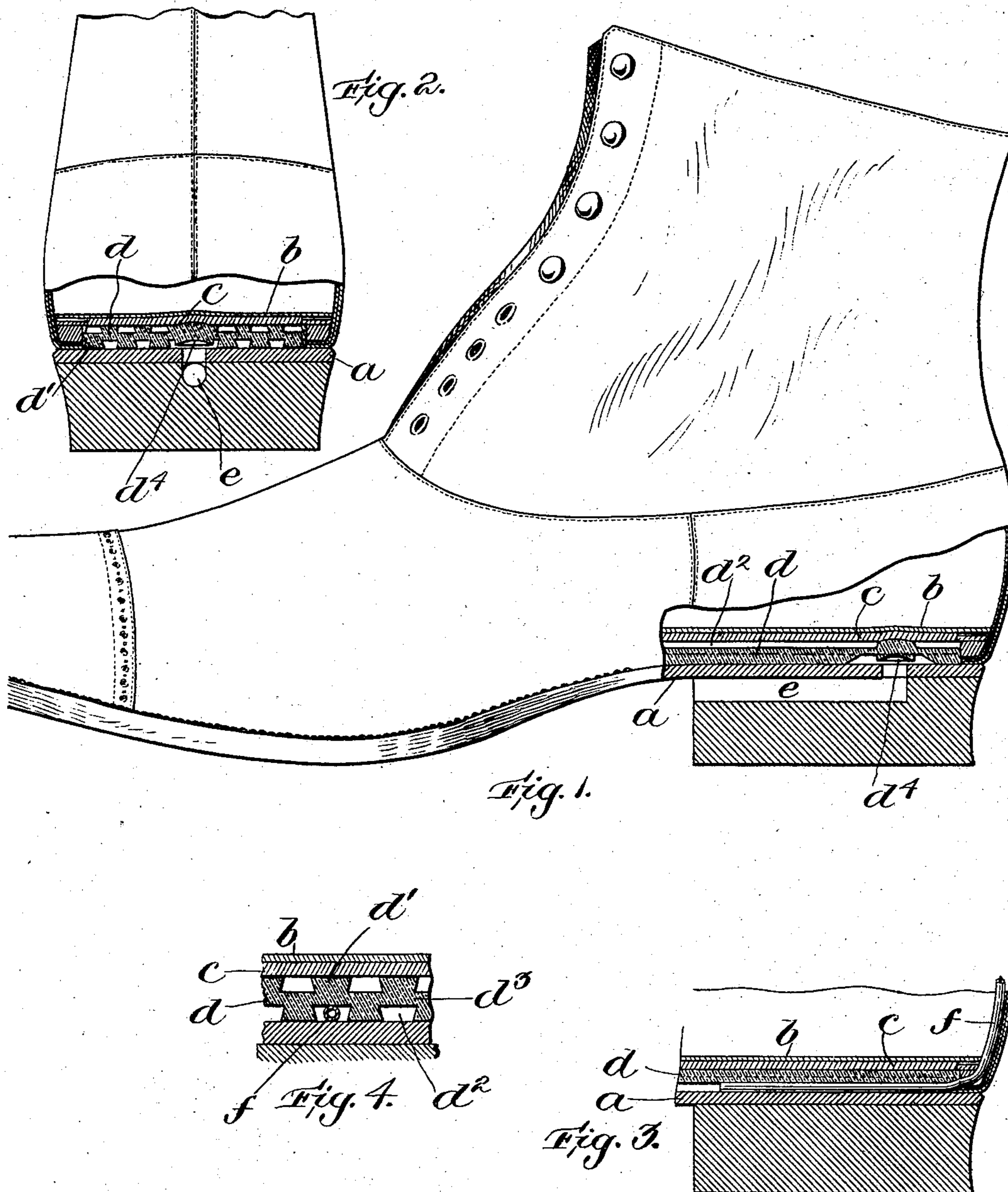
No. 734,338.

PATENTED JULY 21, 1903.

J. E. KENNEDY.  
VENTILATED SHOE.

APPLICATION FILED MAY 20, 1901.

NO MODEL.



Witnesses:

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## UNITED STATES PATENT OFFICE.

JOHN E. KENNEDY, OF BOSTON, MASSACHUSETTS.

## VENTILATED SHOE.

SPECIFICATION forming part of Letters Patent No. 734,338, dated July 21, 1903.

Application filed May 20, 1901. Serial No 61,011. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN E. KENNEDY, a British subject, and a resident of Boston, county of Suffolk, Massachusetts, have invented certain new and useful Improvements in Ventilated Shoes, of which the following is a specification.

My invention relates to boots and shoes which are provided with means for securing a circulation of air, a type of which is shown and described in Letters Patent of the United States No. 635,101, granted to me October 17, 1899.

My invention is intended to provide improved means for preventing the return of the air drawn into the shoe by means of the air-inlet passage through which it is drawn in.

In my patent above referred to I have shown a gravity-valve so arranged as to automatically open and close the air-inlet passage, said valve being arranged to act by gravity when the shoe is in the various positions which it assumes in the act of walking. My present invention dispenses with this arrangement of valve; and it consists in so forming and arranging the intermediate sole with reference to the air-inlet passage as to cause it to allow the air to escape freely through said passage when the intermediate sole is in its expanded position, while closing the end of the passage automatically as soon as pressure is applied.

Referring now to the accompanying drawings, in which I have shown two of the various forms in which I have contemplated applying the principles of the present invention, Figure 1 is a side elevation of a shoe partly broken away on a central sectional plane through the heel portion, so as to disclose more clearly the construction of that part. Fig. 2 is a transverse vertical section of the same construction and arrangement. Fig. 3 is a vertical longitudinal central section of a modified form of the invention. Fig. 4 is a vertical cross-section of said modification.

As herein shown, the shoe is constructed with the usual outer sole *a* and an inner sole *b*, the rear or heel portion of said inner sole being left loose to have a slight vertical movement or play, as in my earlier patent referred to above. This loose heel portion of the in-

ner sole may also be provided with a stiffening-piece *c*. The inner sole rests directly upon the ribbed collapsible fabric *d*. In this case this fabric is shown with the ribs running longitudinally of the shoe instead of transversely, the ribs *d'* thereof being, as before, arranged opposite the channels *d<sup>2</sup>* in either side of a central elastic web *d<sup>3</sup>*, so that upon compression the solid ribs are forced into the vacant spaces or channels, thereby expelling the air from said channels, as in my earlier patent.

Instead of providing the valve in the air-inlet passage *e* I leave said passage without any valve, but form on the under face of the central elastic web *d<sup>3</sup>* of the fabric a small projection *d<sup>4</sup>*, which may be slightly concaved and whose lower circular edge in the normal uncompressed condition of the fabric does not extend quite down to the upper surface of the inner sole. This projecting part *d<sup>4</sup>* is slightly larger in diameter than the hole in the outer sole which allows the air to enter through the passage *e* into the interior of the shoe. It will be obvious that as soon as the pressure of the heel of the wearer is exerted upon the inner sole this projection will be depressed until it seats itself upon the upper face of the outsole around and over the open end of the air-inlet passage, thus preventing the escape of air back through said air-inlet passage *e*. As the heel is the first part of the foot and shoe to strike the pavement or floor in walking, the air is instantly cut off from escape by this passage the moment the foot strikes the floor or pavement. This construction therefore enables me to instantly close said passage before any air can escape through it, and thus all of the air must escape up through the shoe. Moreover, there is no possibility of any derangement of the valve or of its getting out of order.

In Figs. 3 and 4 I have shown another mode of applying the same principle. In this case I lead an elastic compressible tube *f* into one of the longitudinal channels formed on the under side of the intermediate sole *d*. This elastic tube *f* is normally open and free from pressure when the foot is raised from the ground. Instantly, however, that the heel strikes the ground the rib above it is forced down upon said tube *f*, so as to com-

pletely close the same. Upon relieving the pressure by raising the foot the compressing-rib  $d'$  immediately springs upward, owing to the elasticity of the central web  $d^3$ , and the tube  $f$  is left entirely free to expand. This expanding action of the tube may, if desired, be aided by cementing the top and bottom side of the tube to the sole and central web, respectively, so that the raising of the central web aids to draw up the tube, and thus prevent it from becoming permanently broken down or compressed. The feature, however, of relieving the tube wholly from pressure the instant the foot is raised from the ground is one which assists materially in prolonging the life and elasticity of the elastic tube  $f$ . This tube  $f$  may be led to any convenient part of the shoe to afford communication with the outside air. The features which particularly characterize this construction are the absence of any special valve mechanism liable to derangement, the certainty and quickness of its action, as well as cheapness and simplicity in construction.

Without attempting to set forth all the various changes in form, construction, and arrangement which may be made in the practice of my invention or all the modes of its use, what I claim is—

1. In a ventilated shoe, the combination of the outer and inner soles, an intermediate elastic collapsible insole, whose compression acts to expel the air and whose expansion serves to draw air into the shoe, an inlet-passage for the air, said collapsible insole being formed and arranged to close the inner end of said air-inlet when collapsed and to allow it to remain open when the insole is expanded, substantially as described.

2. In a ventilated shoe, the combination of the outer sole, the inner sole and a collapsible elastic intermediate sole formed with interstices which are filled with the solid part of said sole when the fabric is compressed so as to expel air and to draw it in when the insole is expanded, and an air-inlet passage, said collapsible intermediate sole being

formed and arranged to close the open end of said air-inlet passage when the said sole is compressed, substantially as described. 50

3. In a ventilated shoe, the combination of the inner sole the heel portion of which is free to move vertically, a collapsible ribbed elastic fabric arranged beneath said movable heel portion to support the same, an air-inlet passage communicating with a channel on the under side of said elastic ribbed fabric, said fabric being formed with a projecting part arranged to be depressed so as to cover and close the inner end of the air-inlet passage, thereby preventing the expulsion of air through said passage, substantially as described. 55 60

4. In a ventilated shoe, the combination with the outer sole and the inner sole whose heel portion is free to have a slight vertical play or movement, an elastic ribbed fabric arranged between the outer sole and the movable heel portion of the inner sole so as to yieldingly support the movable inner sole, said fabric being arranged with the ribs running longitudinally of the shoe, an air-passage communicating with the under side of said intermediate fabric and having communication with the outer air, said fabric being formed with a projecting portion arranged to normally allow the circulation of air through said passage when the fabric is expanded and to close said air-passage when the fabric is compressed or collapsed, substantially as described. 65 70 75 80

5. In a ventilated shoe the combination of an insole formed of a cellularly-constructed collapsible fabric whose expansion serves to draw air into the shoe, and an air-inlet passage whose normally open end is arranged to be closed by a portion of the insole when said insole is collapsed. 85

In witness whereof I have hereunto set my hand this 7th day of May, 1901.

JOHN E. KENNEDY.

In presence of—

GEO. N. GODDARD,  
M. A. KENNEDY.