

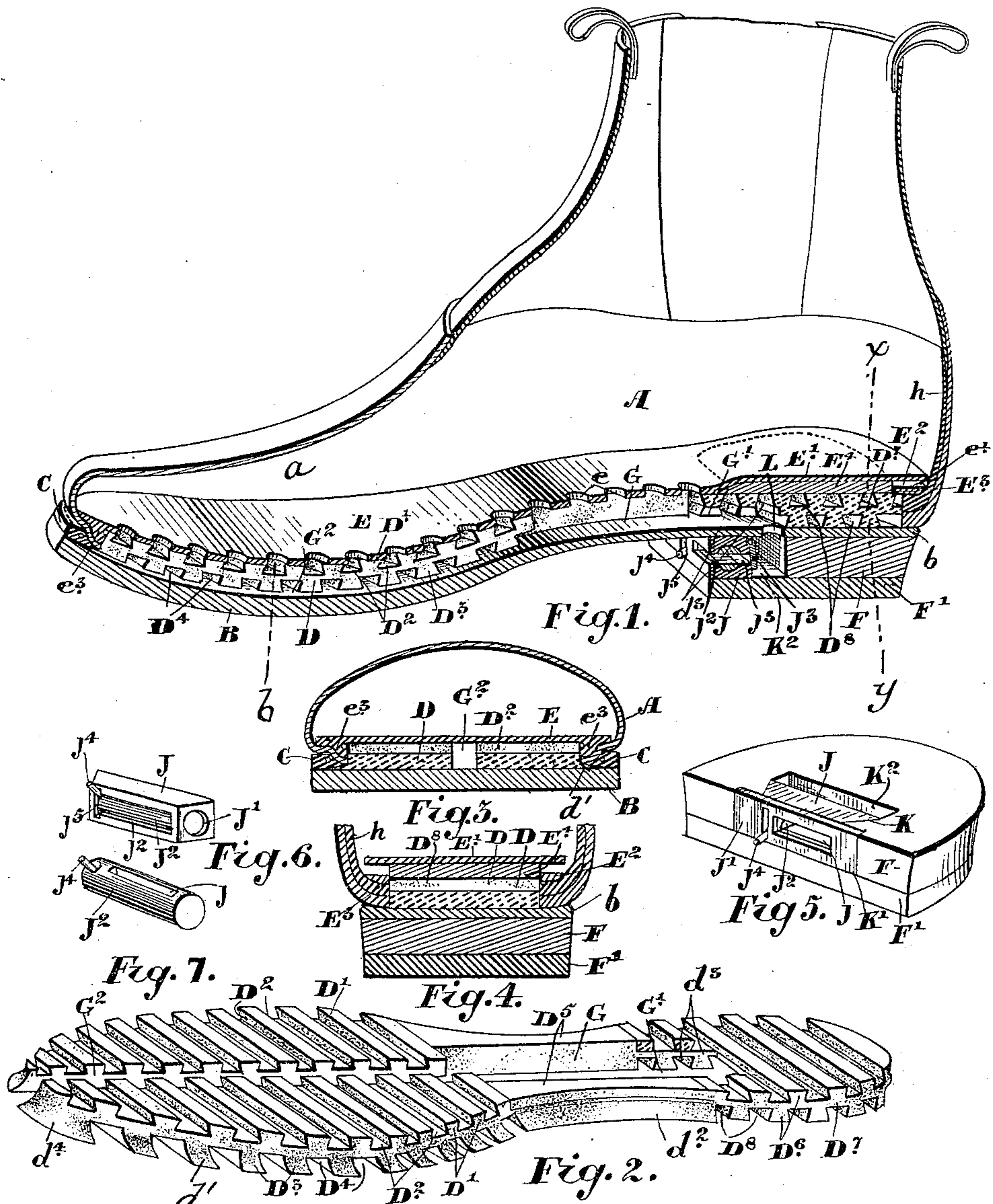
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Patented Dec. 20, 1898.

J. E. KENNEDY.
VENTILATED BOOT OR SHOE.

(Application filed May 10, 1897.)

(No Model.)



Witnesses.
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UNITED STATES PATENT OFFICE.

JOHN ERNEST KENNEDY, OF MONTREAL, CANADA.

VENTILATED BOOT OR SHOE.

SPECIFICATION forming part of Letters Patent No. 616,112, dated December 20, 1898.

Application filed May 10, 1897. Serial No. 635,919. (No model.)

To all whom it may concern:

Be it known that I, JOHN ERNEST KENNEDY, manufacturer, of the city of Montreal, in the county of Hochelaga, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Ventilated Boots or Shoes, of which the following is a specification.

My invention relates to improvements in ventilated boots and shoes; and the features of invention are illustrated in the accompanying drawings and specifically described in the specification and pointed out in the claims.

Figure 1 is a longitudinal sectional perspective view through a boot provided with my improvements. Fig. 2 is a perspective detail of the collapsible center sole. Fig. 3 is a cross-section through the toe portion of the boot on the line *a b*, Fig. 1, and parallel to the tongues of the center sole. Fig. 4 is a cross-section through the heel portion of the boot on the line *x y*, Fig. 1, parallel to the tongues of the heel portion of the collapsible center sole. Fig. 5 is a perspective view of the heel removed, showing the construction and location of the valve-casing. Fig. 6 is a detail of the valve-casing with the front plate removed. Fig. 7 is a detail of the valve proper.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the upper of the boot.

B is the outer sole, having the heel portion *b*.

C is the welt.

D is the collapsible center sole.

E is the insole, and F is the heel.

The collapsible center sole D is made of rubber or other suitable elastic material. The front portion of the sole, upon which the ball and toes of the foot rest, is made with a central section, upon which are formed the upper dovetail-shaped tongues *D'*, forming corresponding grooves *D²* between them, and the lower dovetail-shaped tongues *D³*, forming correspondingly-shaped grooves *D⁴* between them. The tongues of the upper portion of the collapsible sole are opposite the grooves in the lower portion, and vice versa, so that the one sinks into the other when borne upon, thus constituting an elastic spring. The tongues *D'* and *D³* in both portions extend across the foot, as indicated particularly in Fig. 2. The lower tongues *D³* are provided with tapered lateral extensions *d'*, which ex-

tend underneath the welt and are fastened with it to the contacting edges of the upper. (See Fig. 3.) The central portion *D⁵* of the collapsible center sole D has lateral extensions *d²*, which also extend underneath the welt the same as the extensions of the tongues *D³* and are secured thereto in the same manner. It will thus be seen that the collapsibility of the center sole D is extended practically to the very edge of the sole of the shoe.

D⁶ are preferably dovetail-shaped tongues on the upper and lower portions of the web *D⁷* at the heel portion of the collapsible center sole, which are separated so as to form correspondingly-shaped grooves *D⁸*. The tongues formed on the upper portion of the web are opposite the grooves formed in the lower portion, and vice versa.

The central or arched portion of the collapsible inner sole D is formed with a longitudinal channel G, which extends completely through the tongues and grooves formed in the sole and heel portion, respectively. The extension *G'* of the channel G extends underneath the upper tongues *D⁶* and through the lower tongues at the heel portion, so as to form openings *d³*.

G² is an extension of the channel G, preferably narrower than the front end of such channel passing through the toe portion of the collapsible sole.

The insole E is provided with a series of perforations *e*, arranged longitudinally substantially in the center thereof and opposite the channel G of the collapsible center sole D. The heel end of the insole E is slit horizontally into two parts *E'* and *E²* as far forward in the sole as the front of the heel, thus forming the upper part into an independently-movable flap hinged at the front end. The lower part *E²* has a central aperture *E³* cut out of it of substantially the same form as the roundabout contour of the heel, (see dotted lines, Fig. 1,) leaving, however, an edge *e'*, which is secured to the heel-stiffener *h* in any approved manner.

E⁴ is a layer, preferably of sole-leather, which is placed in the aperture *E³* and is designed to loosely fit the same and rest upon the flattened top of the tongues *D⁶*. The layer *E⁴* is thicker than the lower part *E²*, and the upper part or flap *E'* rests upon the top

of the layer E^4 . The toe portion of the insole E is provided with a projecting rib e^3 , which fits in between the front curved end d^4 of the collapsible sole and the inner edge of the upper secured to the welt and extends around the upper vertical edges thereof as far as the heel-stiffener.

J is the valve-casing, provided with a dovetail-shaped inner end fitting a corresponding recess K in the front of the heel.

J' is the front plate of the valve-casing, which is fitted into a corresponding recess K' , so as to be flush with the front surface of the heel. The valve is secured in position from beneath by the lower layer F' of the sole, and the dovetail form of the casing secures it from moving forwardly out of position.

J^2 is a roller-valve provided with a central diametrically-formed opening j . The roller-valve J^2 is journaled in the end openings j' of the casing, and when opened the aperture J is opposite to the outer and inner slots j^2 and j^3 , respectively, formed in the valve-casing.

In order to provide for the opening and closing of the valve, I provide a pin j^4 , which is inserted into the periphery of the roller-valve and extends through a slot j^5 formed in one end of the casing J .

K^2 is a chamber cut out or formed in the heel behind the valve, as indicated.

J^3 is a hinged flap-valve which normally covers the inner slot j^3 .

L is an opening made through the sole B between the chamber K^2 and channel extension G' .

Upon the placing of the foot upon the ground it will be seen that the air beneath the insole of the shoe will be forced through the holes e and around the layer E^4 and between the parts E' and E^2 around the foot and into and through the upper portion of the boot. Upon raising the foot the suction of the air now caused by the collapsible center sole expanding will draw the air through the valve J , opening the flap in so doing, so as to fill the vacuum caused by the depression of the collapsible sole. Upon the foot passing to the ground again the collapsible sole will act as before, serving to keep the flap against the valve and cause the air to pass up around the foot, as hereinbefore described.

I am aware that there are various ventilating devices in which the air is let in by the raising of the foot from the ground and is expelled upon the placing of the foot thereupon through the same aperture without causing the air to circulate around the foot. By my

device the air when once drawn into the boot cannot be forced out through the same aperture again, but must circulate up around the foot and be forced out between the ankle and top of the upper, thus keeping the stocking and lining of the shoe dry by evaporating the perspiration or other moisture as it develops and serving to preserve the foot in a healthy, hardy, and comfortable condition.

As the collapsible sole is arranged with the tongues extending across obliquely, it will be seen that upon pressure upon the insole in walking the greatest possible surface of tongues is depressed, so that a maximum vacuum is created, and consequently a maximum amount of air is drawn into the shoe when the foot is raised. As the collapsible center sole extends practically to the edge of the sole, it will be seen that such sole will be caused to wear evenly. The heel, which is now commonly worn at the back, will be preserved to a great extent, as the first concussion will be received upon the layer E^4 , which is collapsibly supported, as hereinbefore described. The collapsible sole also extending practically to the edge of the upper the interior of the shoe becomes larger when the foot is on the ground, thus overcoming to a great extent the discomfort caused by undue pressure upon the foot at certain parts and at the same time preventing the unsightly stretching of the upper.

Although I show the tongues as extending crosswise of the collapsible sole, it will be understood that I do not wish to limit myself in this respect.

What I claim as my invention is—

1. In combination, the upper, the welt, the outer sole and the collapsible center sole provided with cross tongues or ridges each provided with lateral extensions projecting beneath the welt, and means to secure said center sole in place, substantially as described.

2. In combination in a shoe having a collapsible center sole, an air-passage in communication therewith, an insole having a movable heel-flap and an inelastic piece carried by said flap, substantially as described.

3. In combination in a shoe having a collapsible center sole, an air-passage in communication therewith, an insole having a movable heel-flap, said flap being slit horizontally to form an upper and lower portion, said lower portion having an opening therein and an inelastic piece fitted to said opening, substantially as described.

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