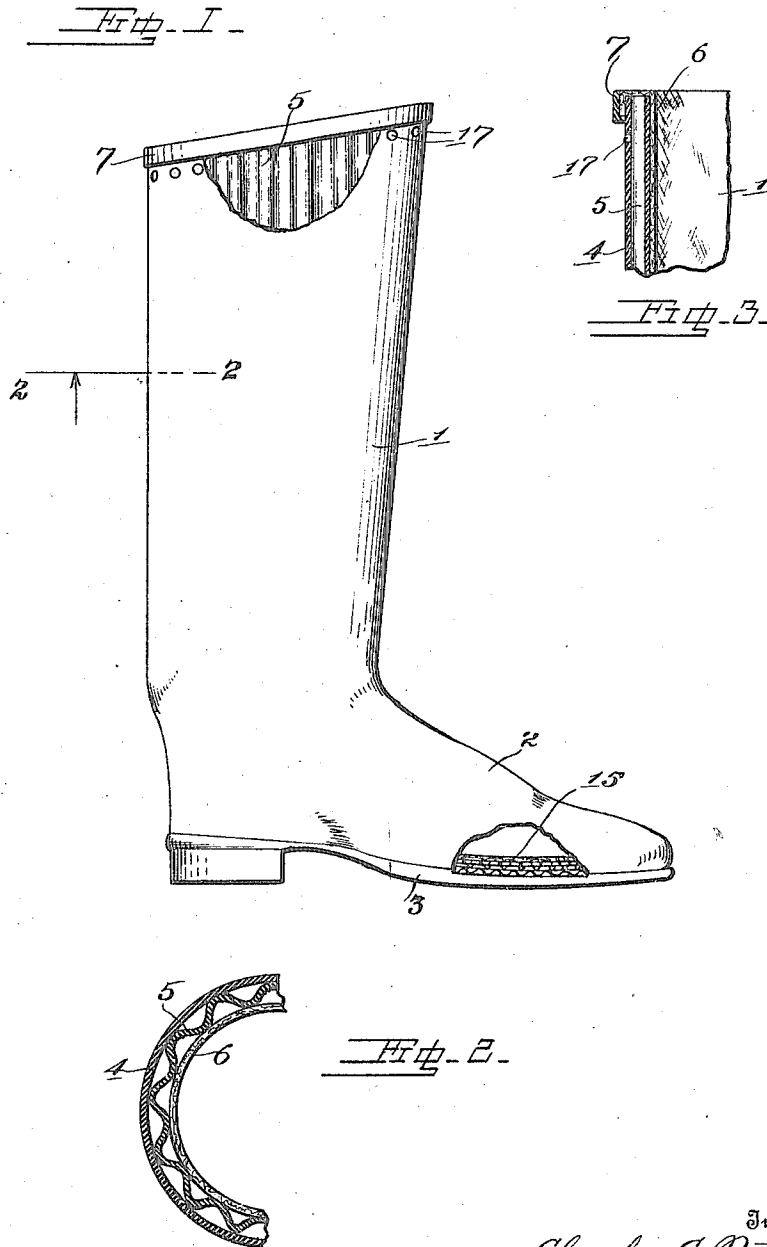


G. A. PATRICK.
VENTILATING DEVICE.
APPLICATION FILED APR. 25, 1914.

1,213,941.

Patented Jan. 30, 1917
2 SHEETS—SHEET 1.



Witnesses
Edw. S. Hall.
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Inventor
Charles A. Patrick.

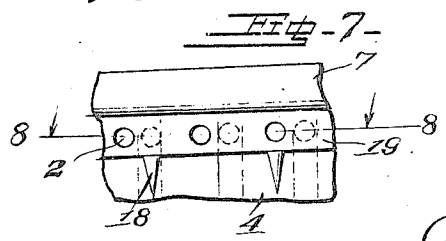
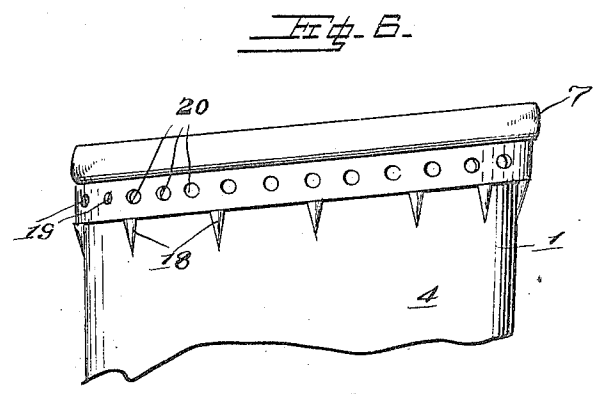
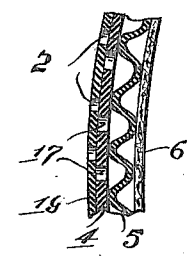
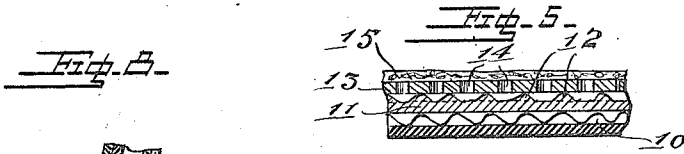
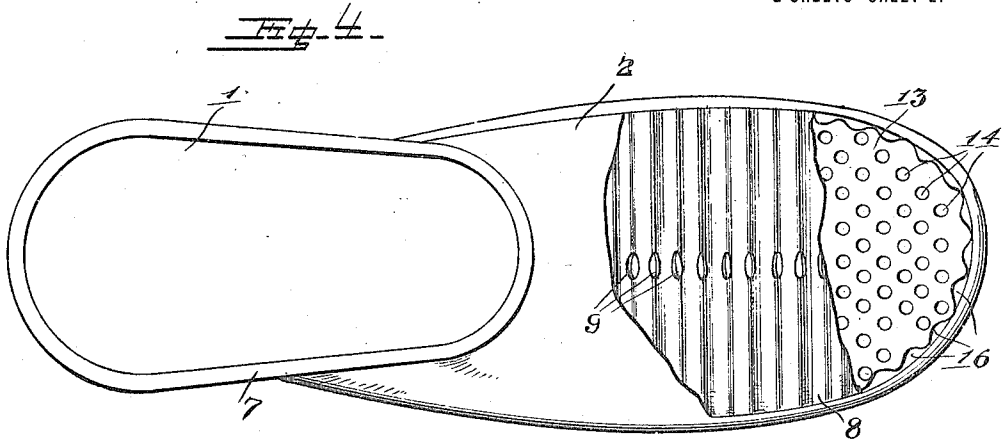
By Richard A. Owen.
Attorney

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UNITED STATES PATENT OFFICE.

CHARLES A. PATRICK, OF HAZEL DELL, ILLINOIS.

VENTILATING DEVICE.

1,213,941.

Specification of Letters Patent. Patented Jan. 30, 1917.

Application filed April 25, 1914. Serial No. 834,511.

To all whom it may concern:

Be it known that I, CHARLES A. PATRICK, a citizen of the United States, residing at Hazel Dell, in the county of Cumberland and State of Illinois, have invented certain new and useful Improvements in Ventilating Devices, of which the following is a specification.

The object of my invention is to provide a ventilating device or system adapted to be built or constructed in a boot, shoe, coat, glove or other article of wearing apparel, to provide an insulation against sudden changes of temperature or extreme temperatures on the outside of the garments.

A further object is to construct a device of this character provided with circuitous or tortuous air passages so constructed that a free circulation of air is permitted.

With other objects in view which will be referred to, my invention consists in the peculiar combination and novel arrangement of parts, such as will be hereinafter more fully described in connection with the accompanying drawings and more particularly pointed out in the appended claims.

In the drawings:—Figure 1 is a view in side elevation of a boot with my invention applied thereto and with parts in section to more clearly illustrate the adaptation. Fig. 2 is a fragmentary transverse sectional view on the line 2—2 of Fig. 1. Fig. 3 is a fragmentary vertical sectional view through the upper edge of the boot structure. Fig. 4 is a view in top plan of the disclosure in Fig. 1 with parts broken away at the foot to better illustrate the construction. Fig. 5 is a vertical sectional view through the sole structure. Fig. 6 is a view in side elevation of a slightly modified form which the upper end of the boot may take. Fig. 7 is an enlarged detail view of the structure disclosed in Fig. 6. Fig. 8 is a horizontal transverse sectional view on the line 8—8 of Fig. 7.

The boot as disclosed comprises the body portion 1 and the foot 2 which latter has the sole 3 secured thereto. To all intents and purposes these parts are in their outward appearance identical with the standard boot, but it will be seen as the description progresses that the body and foot must be slightly larger than the same parts of a boot of ordinary construction.

The body portion of the boot comprises an outer covering 4 which is preferably waterproof or composed of rubber, to form

a protective covering, and to this outer layer 4 is secured a corrugated filler 5 and a substantially non-elastic and preferably somewhat porous lining 6 is secured to the inner side of the corrugated filler 5. It will be understood that the outer covering 4 the corrugated filler 5 and the lining 6 are each flexible and are secured together in such a way that the finished garment will have sufficient flexibility to give to the movement of the body of the wearer. In the body of the boot the corrugations of the filler 5 preferably extend in a vertical direction so that at the top edge they present their open ends, to close which ends the lining 6 is brought over the top edge of the boot structure and is secured down against the outer covering 4 and waterproofed to form substantially a part of this outer covering as at 7 and to form a reinforcing bead at this top edge.

In some instances the foot 2 of the boot can be made with the corrugations of the filler running in the same direction as the corrugations of the filler of the body 1, but it is perhaps preferable that these corrugations be made to run crosswise or transversely of the foot portion as better shown in Fig. 4, where the filler 8 is applied to have the corrugations extending so that the openings formed between the filler and outer covering and the filler and the lining extend across the toe and over the instep of the foot in a transverse direction and are open at their lower ends to communicate with the inner part of the boot near the sole. A plurality of passages 9 are formed through the corrugations of the filler 8 in a transverse direction so that communication is established between the outer and inner air cells and also between the air cells of the body portion 1 of the boot.

The sole structure of the boot comprises the wearing surface 10 which is formed as a continuation of the outer covering 4 or is cemented thereto to form a substantially one-piece structure, and upon this outer sole 10 is placed a cushion sole 11 which cushion sole is made of rubber of a tough consistency or of other material which will withstand the bend of the sole incident to movement of the wearer, and on the upper surface of this cushion sole are a plurality of knobs or beads 12 of a resilient cushion material such as new live rubber and to give further resilience to this cushion sole, means may be formed on the lower side.

thereof to engage with the outer sole 10, or additional cushion means may be disposed between the soles 10 and 11. An insole 13 of a flexible yet reasonably stiff material such as leather is provided to fit within the foot of the boot over the cushion sole 11 and this insole is perforated throughout its entire body with the openings 14 which are preferably spaced at points to come between the beads 12 formed on the cushion sole 11, thus procuring the full cushion effect of a resiliency of the beads 12 and at the same time providing air passages from the air spaces between these beads. To provide a smooth surface for the foot of the wearer, a layer of some pervious material such as felt is secured at 15 by cementing or sewing to the upper side of the insole 13 and thus the air is permitted to circulate up through the foot of the boot and around the foot of the wearer.

The corrugated filler portion 5 is disposed between the outer impervious covering 4 and the inner pervious lining 6, however, this filler strip is stopped slightly above the sole so that communication is established from the outer series of air passages to the inner series, and also the filler strip 5 is merged into the filler strip or sheet 8 so that communication is permitted from the passages formed by the strip 5 to the passages or cells formed by the placing of the strip 8. Not only does this shortening of the strip 5 permit the flow of air from the outer cells to the inner cells, but also a clear passage is provided in this way to the cells of the sole structure, and in this connection it is preferable that the insole and other portions be notched at the edges as at 16, so that air passages are provided from the air cells of the filler strips 5 and 8 to the cells of the air space of the sole structure.

It is preferable that the free atmospheric air be permitted to have circulation through the cells of the filler 5 of the body portion 1 of the boot and in this way pass to the cells of the filler 8 of the foot portion and to allow the ingress of air into these cells I have provided around the upper edge of the body portion 1 of the boot just beneath the bead 7 a plurality of openings 17 through the outer covering 4 which openings permit the free access of air between the outer covering 4 and the filler section 5. In some adaptations it may be found desirable to close these openings 17 or to regulate the amount of air which can pass therethrough, and for this purpose I provide on the outer covering 4 a plurality of lugs 18 spaced a slight distance below the bead 7 at the upper edge of the boot, and a flexible band of metal or other suitable material as indicated at 19 is provided to fit around the body 1 of the boot between the lugs 18 and the bead 7 and to be held in place over the openings 17.

It will be understood that this band 19 is mounted to have sliding or turning motion around the body 1 of the boot over these openings 17 and a plurality of perforations 20 is provided through the band 19 so that when the band is turned to a certain predetermined position communication is established from the openings 17 to the atmosphere.

With the arrangement of the parts as described, so that the openings of the outer series of cells are at the top of the boot or garment structure and the communicating passages to the inner series of cells are around the sole or in the lower part of the garment, the air will find its way through the openings 17 and will fall in a natural path down through the outer series of cells. The top of the boot is open and the heat generated by the foot of the wearer causes the air in the boot to become heated and to rise, this rising of the air from the lower portion of the boot acting to create suction through the outer series of air cells or passages formed by both the fillers 5 and 8, and thus fresh air is taken through the openings from the cells around the sole, part of the air thus being taken in being circulated through the sole structure and the remaining portions after receiving heat from the foot being caused to rise in a natural path up through the inner course or series of cells and to find its way through the inner pervious layer to exhaust through the top of the boot into the atmosphere. Air will be supplied through the outer course of cells of the leg portion of the boot to the outer cells of the foot portion when the parts are constructed as shown in Fig. 4, and the circulation of the air from the cells formed by the filler 8 will be in the same identical manner as the circulation is induced through the cells formed by the filler strip 5, and this circulation will be continued at all times by reason of the fact that heat is being constantly generated and thrown off by the natural bodily warmth of the wearer and thus the circulation up through the top of the boot is continuous causing the circulation through the cells to be forced and maintained in a natural manner. Where the external condition of the atmosphere is cold, this passage of the air down along the body of the boot, through the foot, and to the interior thereof causes the air to become warm by contact with the parts of the boot receiving heat from the body of the wearer, and under reverse circumstances or where the atmospheric air is extremely hot, this circulation tends to cool the air passing through the cells of the boot and there is a consequent reduction of the air temperature within the boot.

While my invention has been described as applied to a boot, it will be understood that

it is equally well adapted to use on shoes, stockings, coats, union garments, gloves and other articles of wearing apparel and that by arranging the cells between the inner and 5 outer layers and positioning the openings to the atmosphere in the manner described a free and constant circulation of air is obtained at all times.

While I have herein shown and described 10 one specific form which the ventilating device might take, it will be understood that slight changes might be made in the form and arrangement of the parts without departing from the spirit and scope of my invention, and hence I do not wish to be limited thereto except for such limitations as the claims may import.

I claim:—

1. A ventilating garment comprising an 20 outer layer, an inner layer, an independent continuous strip mounted between said layers and forming a cellular air space between said outer layer and strip and between said strip and inner layer, said outer layer being 25 provided with air passages adjacent to one extremity thereof and the interposed strip being stopped short of the opposite extremity of the outer layer and the adjacent extremity of the inner layer to permit circulation of air from the space between the outer 30 and interposed layers to the space between the interposed and the inner layers, and means arranged to close over the air passages of the outer layer to stop circulation of air therethrough.

2. A ventilating garment comprising an 35 impervious outer covering having air passages formed therethrough adjacent its upper extremity, a pervious inner covering, and an impervious continuous member located between the outer and inner coverings and providing a cellular air space between said outer covering and the continuous 40 member and between said member and the pervious inner covering, said continuous member being made somewhat shorter than said covering members and being stopped short of the lower ends thereof, all of said parts being so arranged that air may 45 be taken in through the air passages of the outer covering at atmospheric temperature and may circulate downwardly through the outer series of cells and flow around the lower end of the impervious interposed 50 member and then upwardly through the inner course of cells and escape through the pervious inner covering.

3. A ventilating garment comprising an 55 outer impervious covering, an inner pervious covering, and an impervious corrugated strip mounted between said covering portions to provide cellular air spaces be-

tween said interposed strip and the outer covering and between the inner covering and the strip, said corrugated strip being stopped 65 short of one end of said covering portions to establish communication from the outer cells to the inner cells and the outer covering being provided with openings therethrough at the opposite extremity of the 70 garment from that in which communication is permitted from the outer to the inner cells.

4. A ventilating garment comprising an 75 outer impervious covering, an inner pervious covering, an impervious corrugated strip mounted between said covering portions to provide cellular air spaces between said interposed strip and the outer covering and between the inner covering and the 80 strip, said corrugated strip being stopped short of one end of said portions to establish communication from the outer cells to the inner cells and the outer covering being provided with openings therethrough at the 85 opposite extremity of the garment from that in which communication is permitted from the outer to the inner cells, and means to regulate the supply of air through the openings of the outer covering and to permit 90 said openings to be closed.

5. A ventilating garment comprising a plurality of layers of material arranged together to form outer and inner courses of 95 cells, said garment being provided with passages adjacent to the opposite extremities thereof through which atmospheric air is permitted to flow into the outer course of cells adjacent to one extremity of the garment and to pass to the inner course of cells 100 adjacent to the opposite extremity to thus have circulation to affect the temperature within the garment, and means arranged to close over the passages leading to the atmosphere and to thus close the same to the 105 circulation of air.

6. A ventilating garment comprising a plurality of layers of material arranged together to form outer and inner courses of 110 cells, said garment being provided with passages adjacent to the opposite extremities thereof through which atmospheric air is permitted to flow into the outer course of cells adjacent to one extremity of the garment and to pass to the inner course of cells 115 adjacent to the opposite extremity, and adjustable means to regulate and control the supply of air to the outer course of cells.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES A. PATRICK.

Witnesses:

H. A. SHODLEYS,
H. G. WHITMORE.