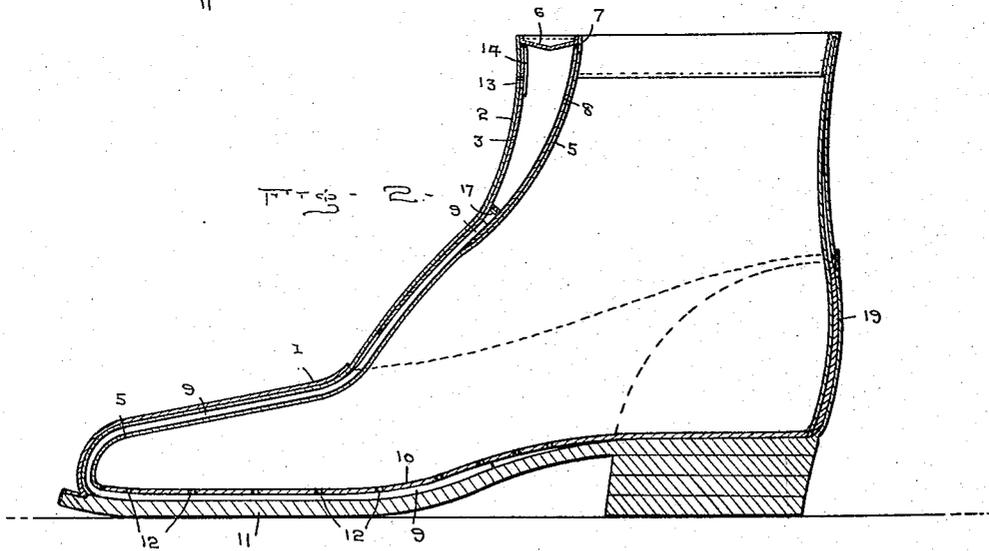
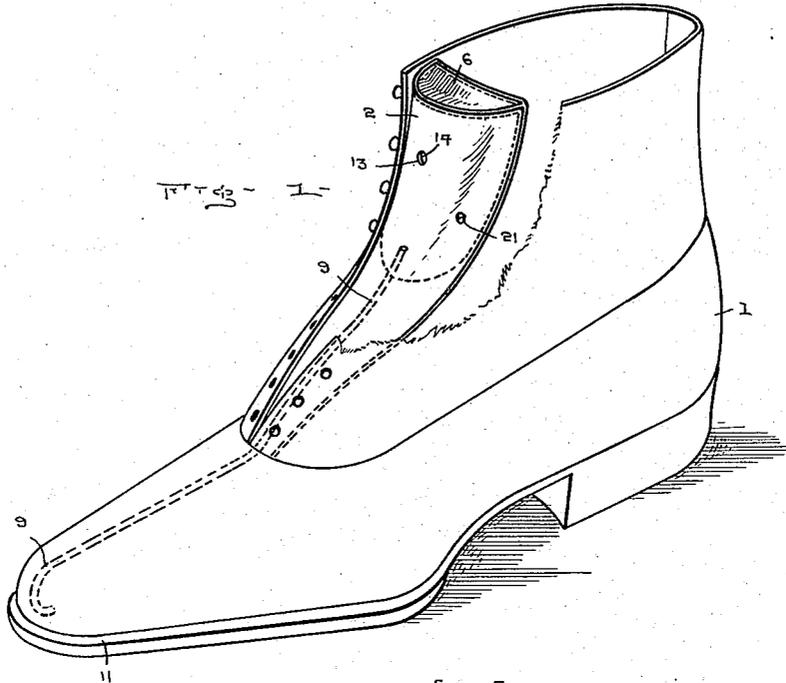


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VENTILATING DEVICE.
APPLICATION FILED MAY 3, 1916.

Patented Feb. 20, 1917.
2 SHEETS—SHEET 1.



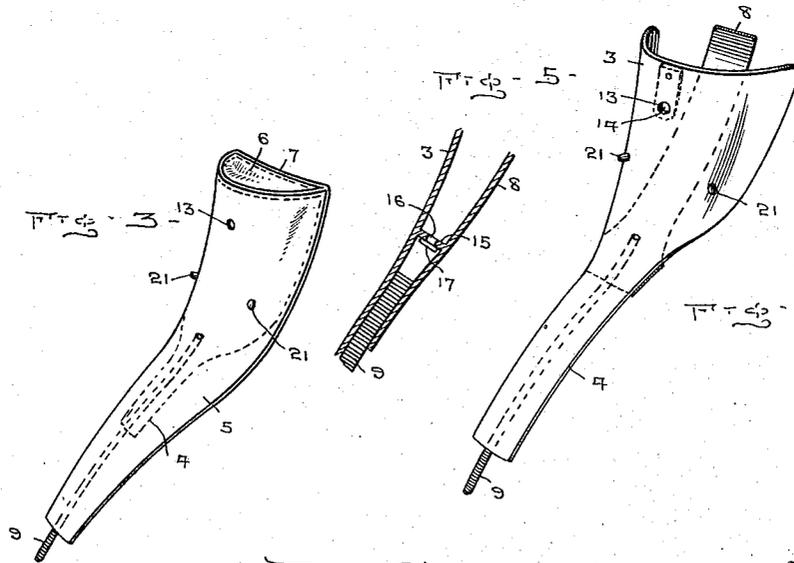
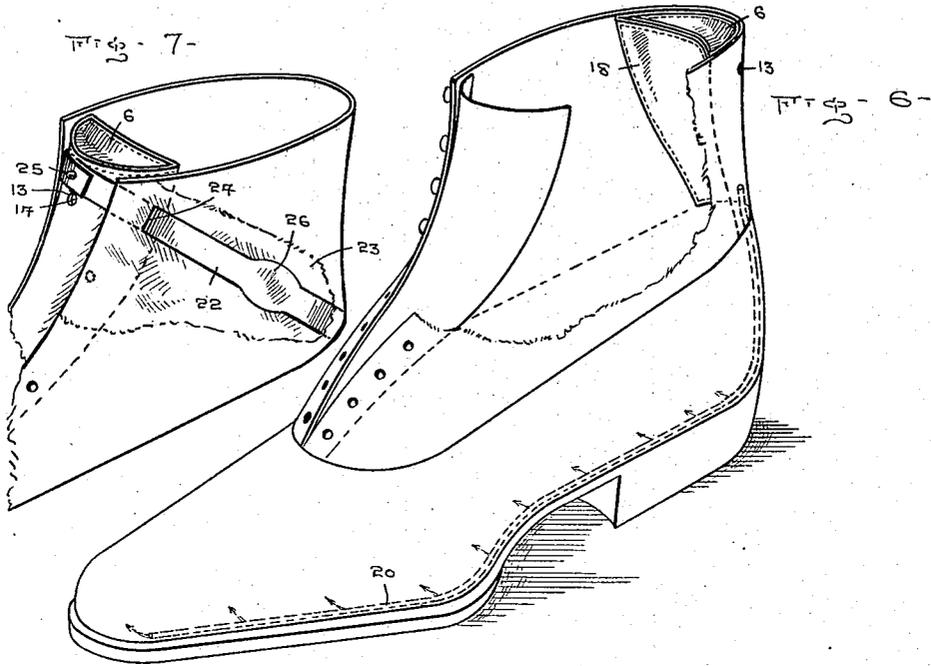
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UNITED STATES PATENT OFFICE.

BENJAMIN GAUSE, OF CINCINNATI, OHIO.

VENTILATING DEVICE.

1,216,795.

Specification of Letters Patent.

Patented Feb. 20, 1917.

Application filed May 3, 1916. Serial No. 95,108.

To all whom it may concern:

Be it known that I, BENJAMIN GAUSE, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Ventilating Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in ventilating devices and more particularly to that class adapted to be used for conveying air into parts of a shoe, and my object is to provide a bellows and place the same within the shoe in position to be operated by the motion of the leg of the wearer of the shoe at each step taken.

A further object is to provide a tube in connection with the bellows for conveying the air from the bellows into any preferred portion of the shoe.

A further object is to provide suitable valves for controlling the intake to and discharge of the air from the bellows.

A further object is to so construct the bellows that it may be used in the forward or rear portion of the shoe, said bellows and parts attached thereto forming the tongue of the shoe when used in the front portion of a lace shoe.

A further object is to provide means to cause the bellows to open after each operation of the bellows to expel the air therefrom.

And a further object is to provide means for retaining the bellows in proper position when employed in connection with a lace shoe.

Other objects and advantages will be hereinafter set forth and more particularly pointed out in the accompanying specification.

In the accompanying drawings which are made a part of this application,

Figure 1 is a perspective view of a lace shoe showing parts thereof broken away.

Fig. 2 is a longitudinal, vertical, central, sectional view thereof, showing the air conveying tube extended a distance below the insole of the shoe.

Fig. 3 is a perspective view of the bellows removed from the shoe.

Fig. 4 is an enlarged perspective view of

one form of the metallic portion of the bellows with the covering removed therefrom.

Fig. 5 is an enlarged detail sectional view through the metallic portion of the bellows showing the valve for controlling the passage of the air from the bellows to the air conveying tube.

Fig. 6 is a perspective view of the shoe showing the manner of attaching the bellows to the rear portion thereof, and

Fig. 7 is a detail perspective view partly broken away showing the manner of holding the bellows in proper alinement when the bellows is substituted for the tongue of the shoe.

Referring to the drawings, in which similar reference numerals designate corresponding parts throughout the several views, 1 indicates a shoe which may be constructed in any preferred manner or style and either fastened by buttons or by laces, but in the present instance, I have shown a lace shoe of the ordinary construction.

In order to thoroughly ventilate the shoe to keep the foot in a cool and non-perspiring condition in the hot season of the year and likewise dry and warm in the cold season, air is to be conveyed into the shoe and discharged at any suitable point between the lining and outer leather of the shoe or may be conveyed from end to end of the shoe and discharged below the bottom of the foot of the wearer as desired, and to this end I provide a bellows 2 which comprises a shield 3, so constructed as to fit the contour of the leg of the wearer at a point above the ankle, said shield preferably having an extension 4 when the bellows is used in the front portion of the shoe, the shield and extension being preferably constructed of metal.

Disposed over the shield and extension is a covering 5 of leather, rubber, textile, or other suitable fabric, said covering preferably fitting snugly against the outer face of the shield 3, while the end 6 and inner face 7 are so arranged that when pressure is applied thereagainst they will bend inwardly and expel the air contained within the bellows, and said end section and inner face are caused to assume their extended position as soon as pressure is removed therefrom, by placing a spring tongue 8 within the space between the covering and the inner face of the shield, the lower end of the tongue being attached in any suitable manner to the lower

portion of the shield while the upper portion of the tongue is normally extended outwardly from the shield and engages the inner face 7 adjacent its connection with the end section 6.

When the bellows is used in connection with a lace shoe, it is preferably substituted for the usual form of flap for covering the space between the lace edges of the shoe top, and if desired the covering may be extended from the upper end of the bellows to the extreme forward end of the shoe, as best shown in Fig. 2 of the drawings, and between the two layers of the covering is positioned a hollow tube 9, the upper end of the tube being introduced between the shield 3 and fixed end of the spring tongue 8, said tongue and shield being so attached around the end of the tube as to prevent the escape of air at any point except through the tube.

The tube 9 may terminate at the toe of the shoe, or may terminate at any point after leaving the bellows, or may extend toward the heel of the shoe any preferred distance, in which instance the tube is preferably disposed below the insole or lining 10 of the shoe and the main sole 11, a plurality of perforations 12 being formed through the insole for the escape of the air into the shoe and in direct contact with the foot, the tube 9 likewise having perforations at intervals for the escape of the air therefrom.

When the tube is terminated at a point between the toe of the shoe and the end of the tongue, the air pumped into the shoe will be diffused over the entire foot, as the lining of the shoe is usually formed of cloth and porous, thus eliminating the moisture occasioned by the perspiration from the foot. This manner of ventilating the shoe not only acts to drive out the moisture but prevents chafing of the foot and also protects the leather from decay occasioned by excessive perspiration of the foot.

The tube 9 may be constructed of any suitable flexible material, preferably of spirally wound wire, the coils of which are so arranged as to form a non-leakable passage, and although the covering and tube, as shown in the drawings, are on an exaggerated scale, it will be clearly understood that said tube and covering will not in any manner form a projection or extension which would in any way interfere with or injure the foot of the wearer.

The air is admitted into the bellows through the port 13 over the inner face of which is placed a valve 14, which valve will admit the air through the port 13 but will immediately close and prevent the escape of the air therethrough, when inward pressure is applied to the face 7 of the bellows. As the front wall of the bellows is pressed inwardly the air within the bellows will be forced through the tube 9 and discharged at

any suitable point into the shoe, and to prevent the return of the air into the bellows, a partition 15 is formed between the tongue 8 and shield 3, immediately above the end of the tube 9, through which is formed a port 16, and engaged with the lower face of the partition and adapted to extend over said port is a valve 17 which will readily open to admit the air into the tube but will immediately close and prevent the return of the air into the bellows when said bellows is again expanded, thus causing a fresh supply of air to be drawn into the bellows and discharged into the bottom portion of the shoe.

When the bellows is attached to a button shoe, it is secured to or built in the flap which goes across the front of the foot and the bellows is shaped to fit the contour of the flap. Instead of attaching the bellows to the front portion of the shoe, it may be attached to the rear portion thereof, as shown in Fig. 6 of the drawing, in which instance the extension 4 is dispensed with if desired, the lower end of the bellows 18 preferably terminating at the top of the reinforcing counter 19 of the heel portion of the shoe, the tube 20 being extended downwardly to the bottom portion of the shoe and thence along one side thereof any suitable distance, the air being discharged from the tube at intervals in its length, as indicated by the arrows in Fig. 6, but instead of disposing the tube along the side of the shoe it may be extended centrally of the shoe, in which instance it is positioned between the main sole of the shoe and the insole thereof.

In order to hold the bellows in proper alinement when substituted for the tongue of the shoe, studs 21 may be formed upon the shield 3 and extended through the covering 5 and by engaging said studs with certain of the eyelets in the top portion of the shoe, the tongue will be held in proper position when the shoe is properly laced.

Instead, however, of providing the studs for holding the bellows in proper position, that form of device shown in Fig. 7 may be employed, in which instance a strap 22 is placed between the lining 23 and the outer portion of the shoe top, the forward ends of the strap being extended through slots 24 adjacent the forward portion of the top so that said ends may be extended over and engaged with a stud 25 attached to the front portion of the shield 3, said overlapping ends of the strap having eyelets there-through for engagement with the stud and as the strap is attached to the shoe top at the rear portion of the shoe near the counter of the heel, the bellows will be held in proper position regardless of the manner in which the shoe may be laced. If desired, that portion of the strap 22 passing over the ankle joint, may have an enlarged portion

26 to give additional support to the ankle, and if desired the strap may be shortened and sewed or otherwise attached to the inside of the shoe top near the front thereof.

5 By placing the bellows in the top portion of the shoe, either in the front or rear thereof, it will be readily seen that the swinging motion of that portion of the leg above the ankle will alternately depress and release
10 the bellows as the wearer of the shoe is walking, thereby discharging a predetermined quantity of air into the shoe at each step, thus ventilating the shoe and retaining the foot in cool condition in hot weather and
15 in a warm state in cold weather, as dampness, caused by perspiration, is eliminated.

It will likewise be seen, that by placing the bellows in the top portion of the shoe, no part of the weight of the body will be directed thereon, as is true of other structures employed for forcing air into the shoe.

It will likewise be seen that when a lace shoe is used the bellows and its covering may be substituted for the ordinary form of
25 tongue commonly used with shoes of that structure.

It will likewise be seen that the bellows can be built into the shoe as the shoe is being manufactured or may be attached to the
30 shoe at any time and at a minimum expense.

And it will likewise be seen that by placing the bellows within the shoe at the points shown, the contour or pleasing effect of the
35 shoe will be undisturbed.

Having thus fully described my invention what I claim as new and desire to secure by Letters Patent of the United States, is:—

1. The combination with a shoe, of a bellows positioned in the shoe, and having valves adapted to control the admission and
40 expulsion of air into and from the bellows, said bellows being adapted to be operated to force air into the shoe by the movement of that portion of the leg above the ankle.

2. The combination with a shoe, of a valved bellows positioned therein and extending above the level of the ankle and in position to be operated to force air into
50 the shoe by the relative movement of the foot and the leg above the ankle.

3. The combination with a shoe, of a bel-

lows attached to the upper portion of the shoe and positioned to receive pressure of the leg of the wearer of the shoe to operate
55 the bellows, a valve at the upper and lower ends of the bellows adapted to control the admission and expulsion of air into and from the bellows, and means to convey air from the bellows to the interior of the
60 lower portion of the shoe.

4. A means for forcing air into a shoe, comprising a bellows, a plate within said bellows, a spring tongue adapted to normally hold the bellows in extended position,
65 valves in said bellows, and a flexible tube connected with the bellows adapted to convey air to various parts of the shoe.

5. A bellows for forcing air into a shoe for ventilating the same, comprising a plate,
70 a spring tongue having one of its ends secured to the plate, a covering for the plate and tongue, valves adapted to control the admission and expulsion of air from the bellows, and a tube for conveying the air
75 from the bellows to parts of the shoe.

6. A bellows for conveying air into the interior of a shoe, comprising a covering of flexible material, said covering having an air receiving space, a plate surrounded by
80 said covering, a spring tongue secured at one end to the plate and having its opposite end in engagement with parts of the covering to hold the covering in extended position, valves adapted to control the admission
85 and discharge of air into and from the compartment in the covering, and a flexible tube adapted to convey the air from said compartment to the interior of the shoe.

7. The herein described means for conveying air into the lower portion of a shoe,
90 comprising the combination with a shoe, of a bellows attached to the shoe and forming a flap at the front of the shoe, and means carried by the shoe adapted to be engaged
95 with said bellows to retain the bellows in operative position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BENJAMIN GAUSE.

Witnesses:

T. G. BUCHANAN,
HUGH W. RANKIN.