

No. 644,412.

Patented Feb. 27, 1900.

**E. H. DUNBAR.**  
**CUSHIONING DEVICE FOR BOOTS OR SHOES.**

(Application filed Nov. 17, 1899.)

(No Model.)

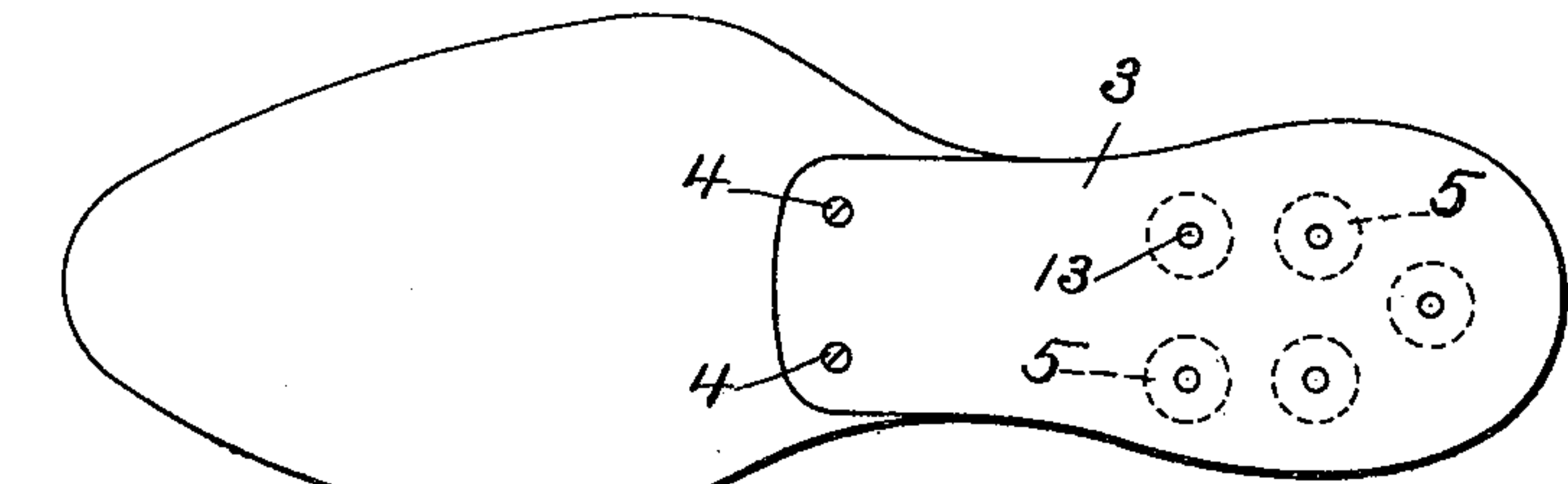


FIG. 2.

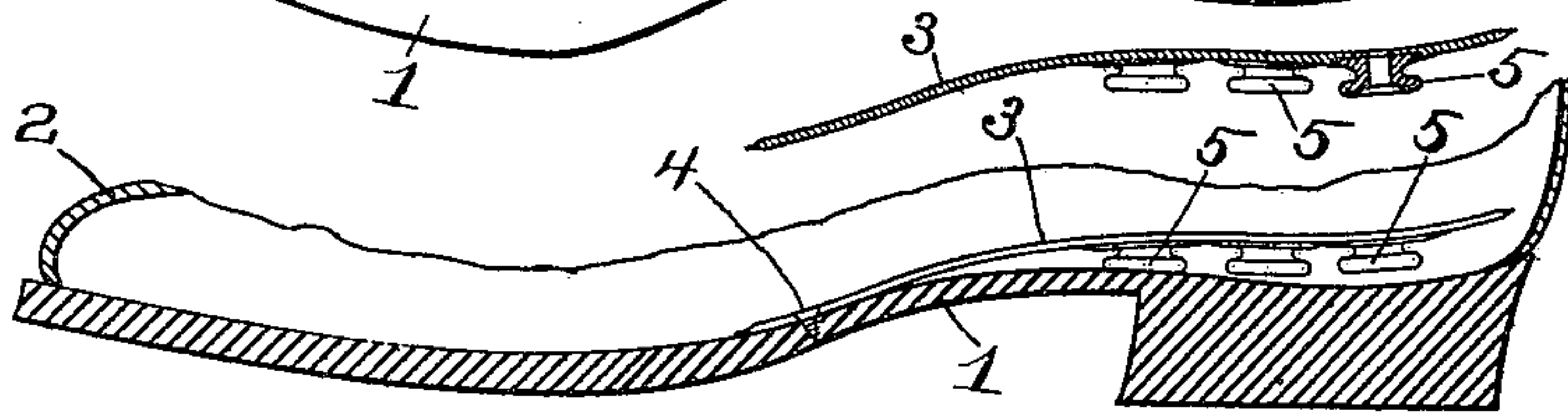


FIG. 3.

FIG. 1.

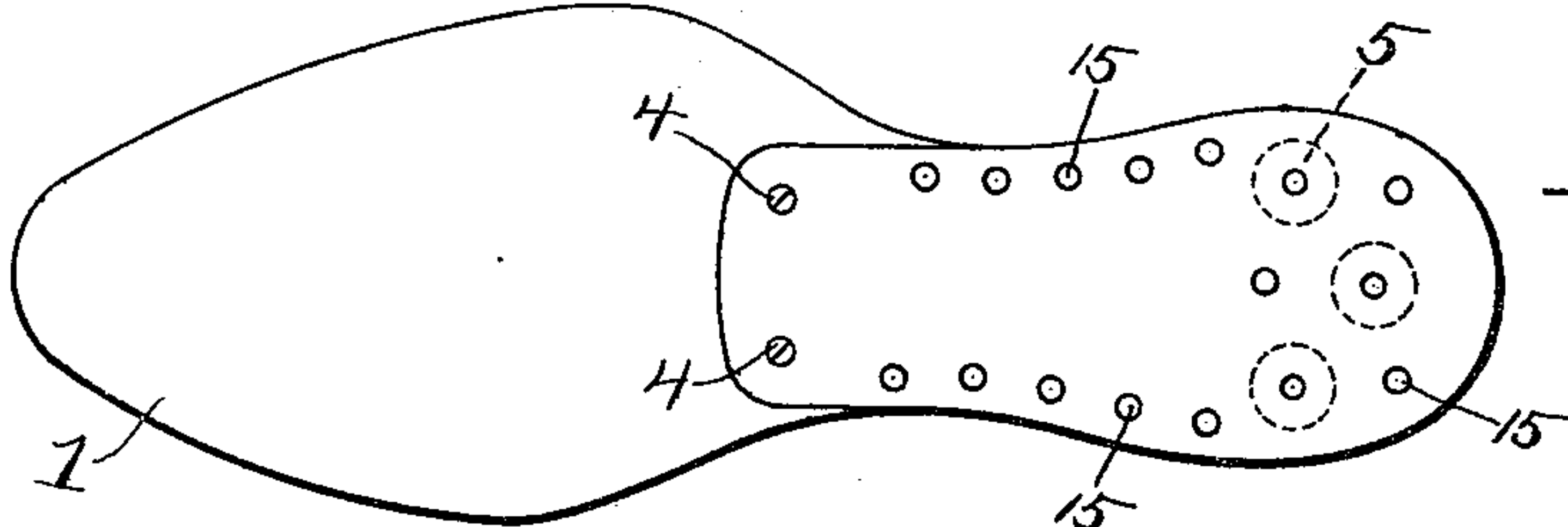


FIG. 4.

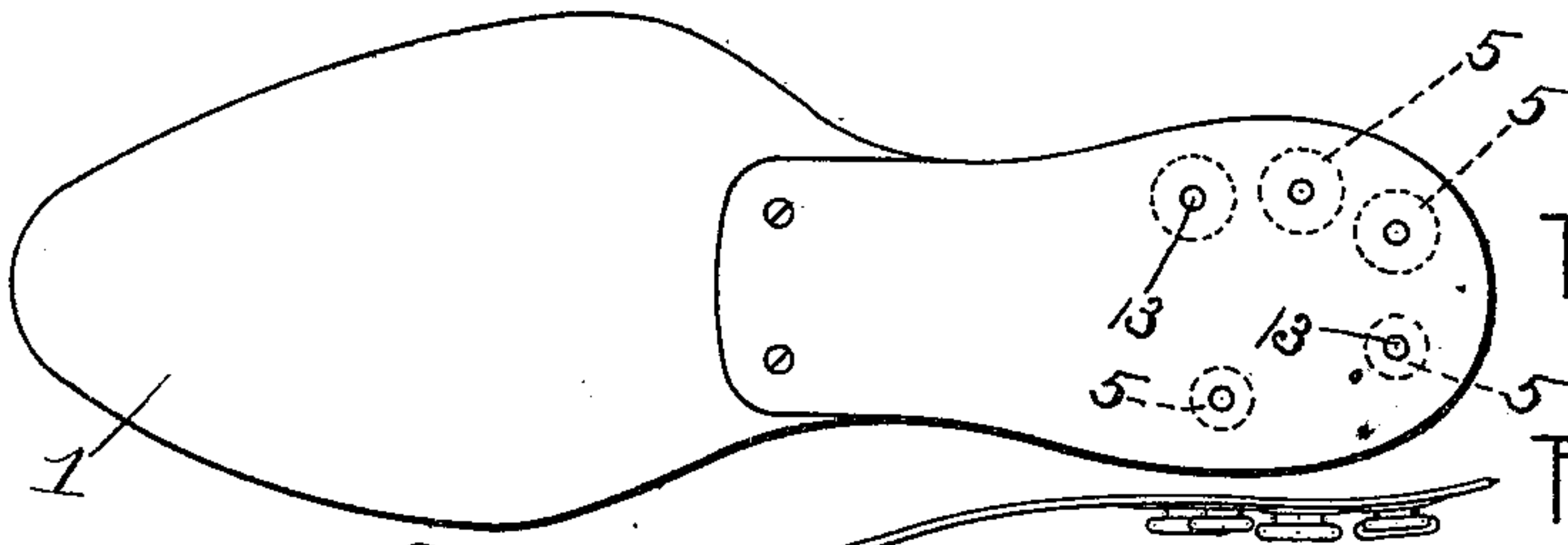


FIG. 5.

FIG. 6.

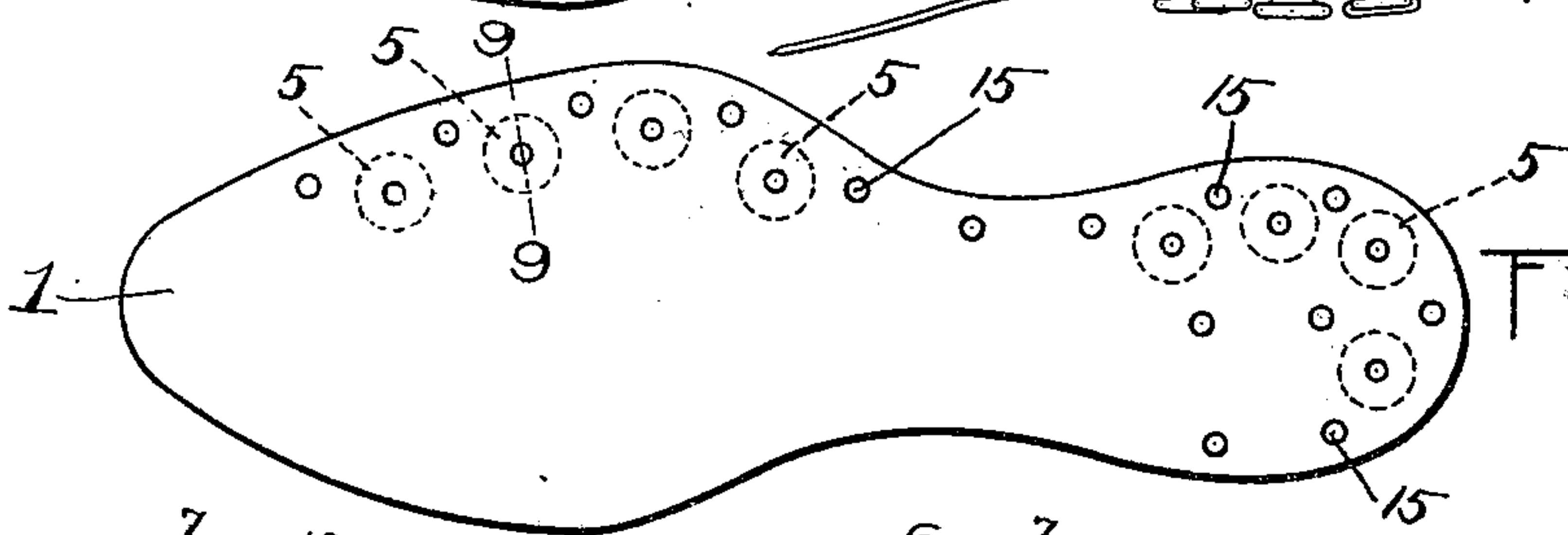


FIG. 7.

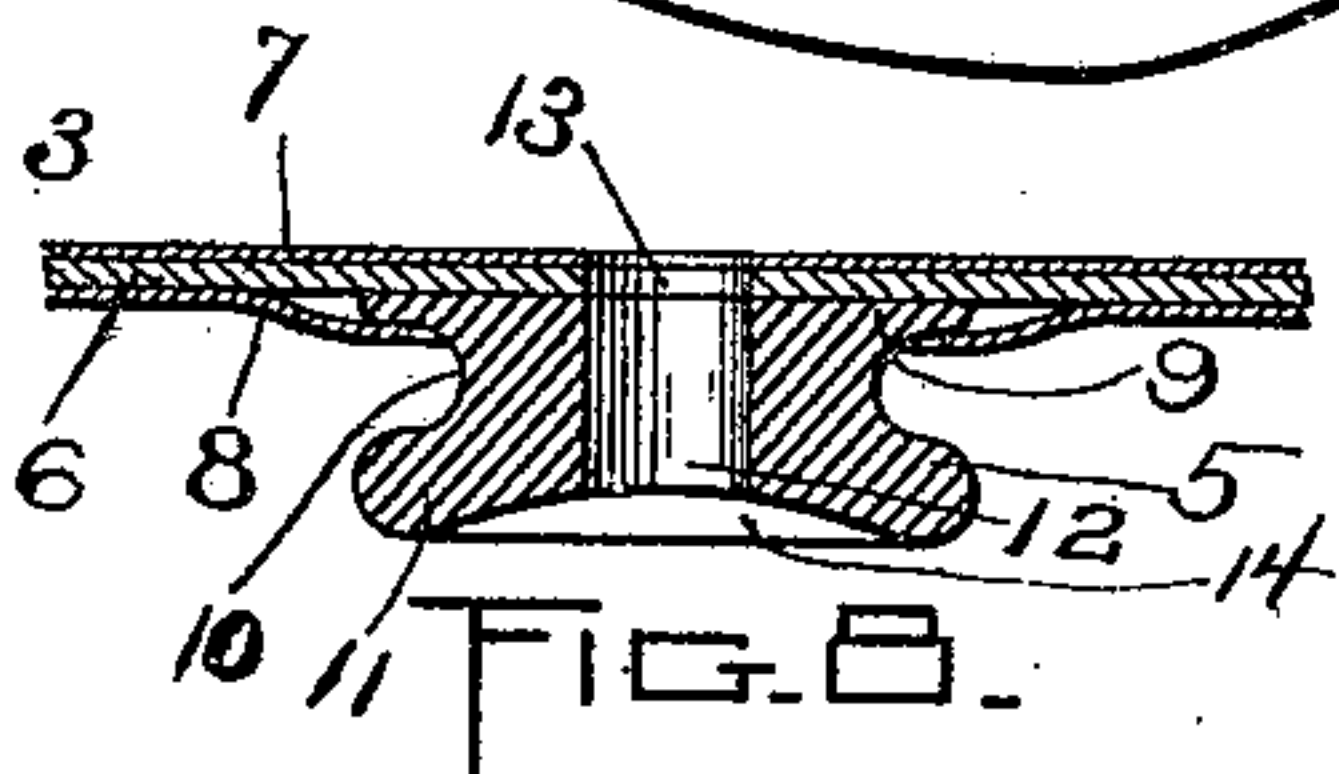


FIG. 8.

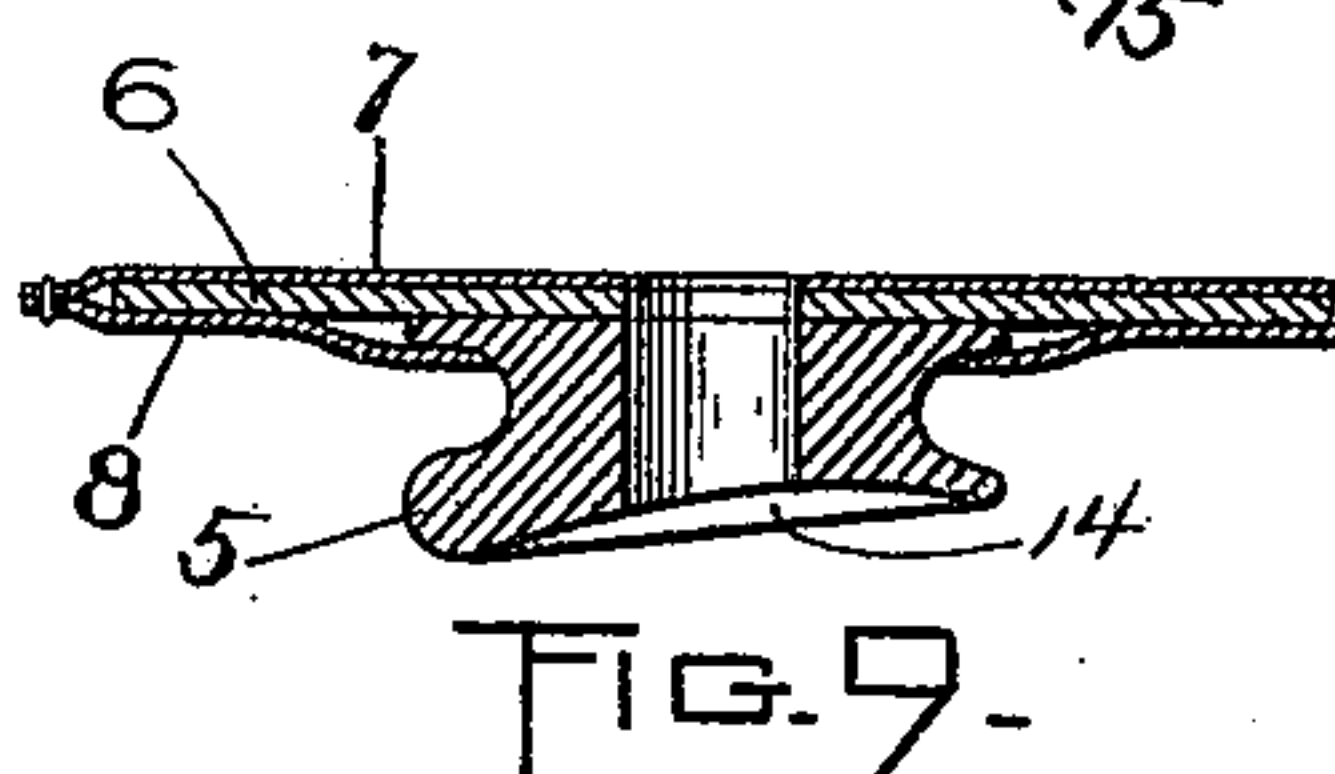


FIG. 9.

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# UNITED STATES PATENT OFFICE.

EVERETT H. DUNBAR, OF LYNN, MASSACHUSETTS.

## CUSHIONING DEVICE FOR BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 644,412, dated February 27, 1900.

Application filed November 17, 1899. Serial No. 737,271. (No model.)

*To all whom it may concern:*

Be it known that I, EVERETT H. DUNBAR, of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Cushioning Devices for Boots or Shoes, of which the following is a specification.

This invention consists in an improved cushioning device for boots and shoes, the novel features of which I shall now proceed to set forth.

Of the accompanying drawings, Figure 1 represents a sectional view through the lower portion of a shoe, showing my improved cushioning device. Fig. 2 represents a plan view of the sole part of the shoe with the cushion. Fig. 3 represents a sectional view through the cushioning-plate. Fig. 4 represents a plan view similar to Fig. 2, showing a modification. Fig. 5 represents a similar plan view showing another modification. Fig. 6 represents a side or edge view of the cushioning-plate in the latter. Fig. 7 represents a plan view showing a third modification. Fig. 8 represents an enlarged sectional view of one of the cushioning studs or buttons. Fig. 9 represents a similar view showing a modified form thereof, said view being a section on line 9 9 of Fig. 7.

The same reference characters indicate the same parts in all the figures.

Referring to the drawings, 1 designates the lowermost part or bottom wall of a shoe, the same comprising the sole, inner sole, and heel, or other usual construction.

2 designates the upper of the shoe.

3 represents in Figs. 1, 2, and 3 a cushioning-plate whose length is about half that of the bottom of the shoe and whose rear edge contour coincides with the corresponding contour of the shoe-sole and of the foot. At its front ends said plate 3 is shown as provided with screw-holes adapted to receive screws 4 4, by which the front end of the plate is attached to that portion of the bottom of the shoe which comes next the wearer's foot, ordinarily the inner sole, the rear part of the plate being left free.

Between the bottom of the shoe and the free rear end of the plate 3 are interposed suitable cushioning devices, which, as here shown, consist of soft rubber buttons or studs

5 5, attached to the under side of the plate 3. The attachment may be effected as shown in Fig. 8, in which 6 represents the main body or layer of the plate 3, the same being permissibly composed of sheet metal, such as brass, while 7 and 8 designate facing-layers applied to the opposite faces of the body-layer 6 and permissibly composed of leather, cloth, or similar material. The facing-layer 8 on the under side of the plate is provided with a series of perforations through which the studs 5 5 project, said studs each having a base portion 9, which is held between the body-layer 6 and the facing-layer 8. The studs 5, in addition to said base portion 9, are represented in shape as contracted at their middle portions 10 to form a neck and a terminal head 11 beyond the said neck. This shape of the studs imparts a high degree of compressibility to them, so that when pressure is applied to the upper side of the plate by the weight of the wearer's foot the studs will be much reduced from their normal thickness, and when such weight is removed they will resume their usual size.

The resilience of the cushioned plate underlying the wearer's foot inside the shoe greatly increases the comfort of walking, since it reduces the shock or pounding caused by interposing an unyielding body between the foot and the ground. The advantages incident to an internal cushioning device as opposed to an external cushion or tread are many, among them being greater sightliness, less subjection to wear, less liability to displacement, and the absence of the tendency to slip in wet weather, which is present when external rubber treads are employed.

I utilize the alternate increase and decrease in the space above and below the cushioned plate due to the vertical displacement of said plate in walking to secure an improved ventilating effect, the value of ventilation being apparent and well known. As seen in the drawings, the rubber buttons or studs 5 5 are each formed with a central through-aperture 12, while the plate 3 is apertured at 13 13 in alinement with the apertures in the studs, whereby a series of apertures or perforations extending from one side to the other of the cushioned plate are caused to exist. When the thickness of the studs 5 5, and hence the



length of their central apertures, is decreased by compression, air is forced out of the upper ends of the apertures 12 13, and when the pressure is relieved the air is drawn into said apertures. A sensible ventilating effect is thereby obtained, and this effect may be increased by concaving the under or outer end faces 14 of the studs, as seen in the drawings, said concaved faces providing extensible and contractible air-spaces of relatively-large area between the faces of the studs and the bottom of the shoe and connecting with the apertures 12 13. The concaving of the stud ends, as also the formation of contracted necks on said studs, as hereinbefore mentioned, increases their compressibility and decreases the amount of material necessary to make them. I may further provide, as shown in Fig. 4, a series of perforations or apertures 15 15 in the plate 3 extraneous to the studs 5 and extending from face to face of the plate, said perforations providing an additional ventilating effect when vertical movement of the cushioned plate takes place. The perforations 15 15 may be located between the studs 5 5 or in groups or other desired arrangement at suitable points.

The plate 3 (shown in Figs. 1 to 6) extends for a portion only of the length of the shoe and is secured to the shoe at its forward end, as hereinbefore stated. By making the plate of springy material it may be so arranged that when relieved of pressure its free end will be elevated, as shown in Fig. 1, due to said springiness or resilience.

In Fig. 7 my invention is shown as embodied in a cushioned plate 3 extending for substantially the whole of the inside bottom length of the shoe, in which case the plate may be placed loosely inside the shoe without being fastened thereto.

The tendency to tread over on one side of the shoe more than on the other may be counteracted in various ways, herein shown. One way is to make the buttons or studs 5 5 more numerous on one side of the median longitudinal line of the plate than on the other, as seen in Figs. 5 and 7. A second method is to increase the thickness of the individual studs—that is, the amount of their projection from the under face of the plate—on one side of said line over their thickness on the other side, there being, as seen in Figs. 5 and 6, studs 5 of two different sizes disposed, respectively, on opposite sides of the said median line. A third method is to make the indi-

vidual studs nearest the edge of the plate of a shape such as is indicated in Fig. 9, the stud having an inclined outer face, the thickest portion being on the side nearest the edge of the plate. These three methods may exist separately or may be embodied simultaneously in one cushioning device.

I claim—

1. The combination with a boot or shoe, of an inner plate forming a bearing for the under side of the foot, and perforated rubber studs or buttons interposed between said plate and the bottom of the shoe, the said plate being perforated in alinement with the perforations in the studs.

2. A cushioning device to be placed inside of boots and shoes, said device comprising a plate provided with a series of rubber buttons or studs projecting from one face and having ventilating-perforations extending from one side to the other through said studs.

3. A cushioning device to be placed inside of boots and shoes, said device comprising a plate provided with a series of rubber buttons or studs projecting from one face, the studs being shaped with a neck or contracted portion adjacent to the plate, and a terminal head beyond said neck.

4. A cushioning device to be placed inside of boots and shoes, said device comprising a plate provided with a series of rubber buttons or studs projecting from one face and concaved on their outer ends, the device having ventilating-perforations extending from side to side through said studs.

5. A cushioning device to be placed inside of boots and shoes, said device comprising a plate consisting of a body part or layer, and a facing-layer having perforations, and a series of rubber buttons or studs projecting through said perforations and having bases held between the body-layer and the facing-layer.

6. A cushioning device to be placed inside of boots and shoes, said device comprising a plate provided with a series of rubber buttons or studs projecting from one face and disposed along the edge of the plate, said studs having inclined end faces and being thickest on the side nearest said edge.

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

EVERETT H. DUNBAR.

Witnesses:

M. B. MAY,

E. BATCHELDER.