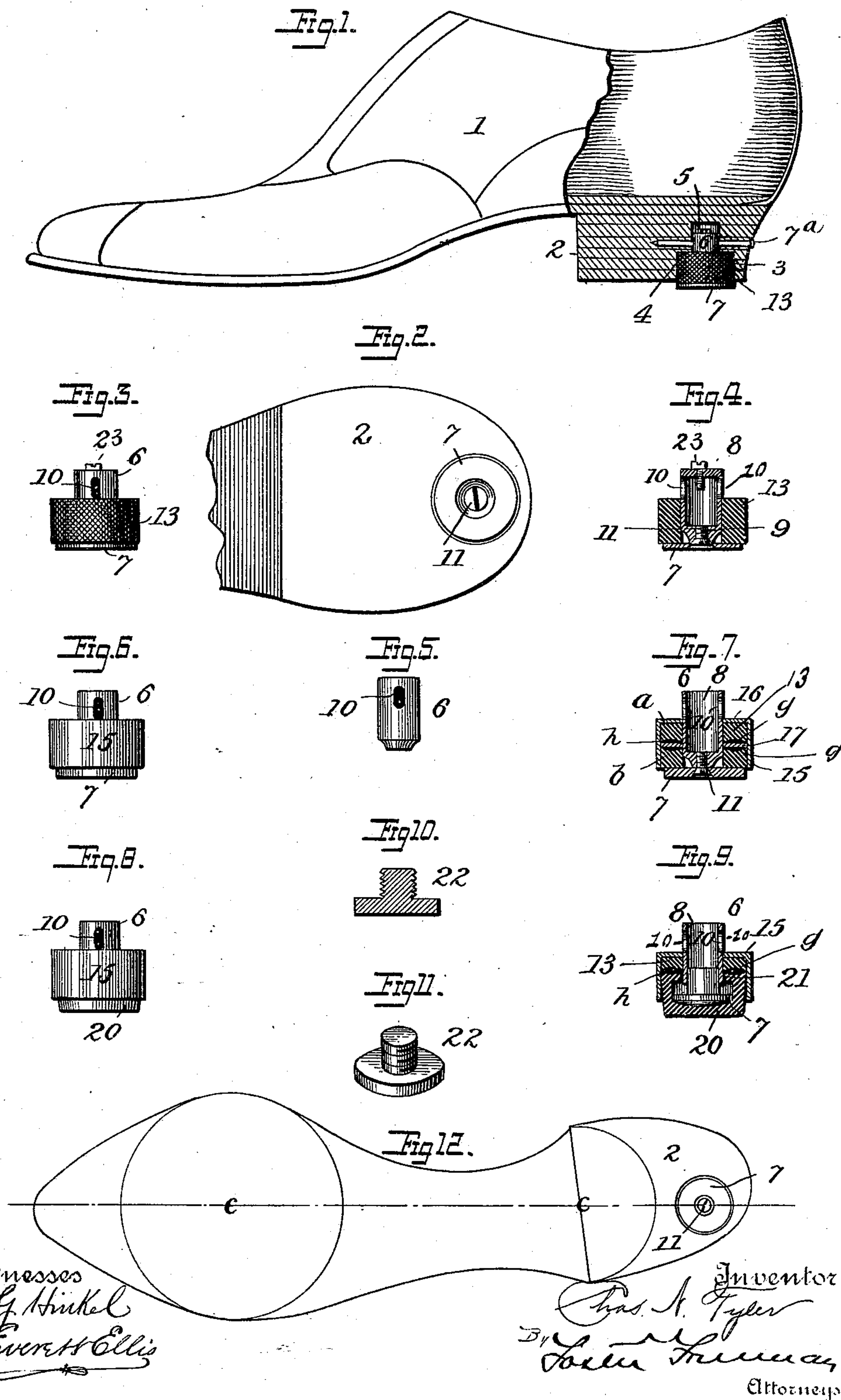


(No Model.)

C. N. TYLER.
WEAR PLATE FOR HEELS.

No. 547,821.

Patented Oct. 15, 1895.



UNITED STATES PATENT OFFICE.

CHARLES N. TYLER, OF BUFFALO, NEW YORK.

WEAR-PLATE FOR HEELS.

SPECIFICATION forming part of Letters Patent No. 547,821, dated October 15, 1895.

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To all whom it may concern:

Be it known that I, CHARLES N. TYLER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Devices for Shoe-Heels, of which the following is a specification.

My invention relates to certain new and useful improvements in heel-plates for boots and shoes; and it consists substantially in such features thereof as will hereinafter be more particularly described.

The invention has for its object the uniform even wear of the heels and soles of boots and shoes by centralizing the weight of the foot and leg to and upon a vertically-yielding device within an opening in the rear of the heel centering upon the line of weight running through the heel and sole of the shoe, which device is arranged within the heel-opening, so as to strike the ground first in walking, thus causing the weight of the foot and leg in moving forward as the device touches the ground to centralize all momentum and weight force forward upon the heel and sole upon this line, and as the weight of the body falls upon the sole it is equally distributed upon either side of this line, thus causing equality of wear upon the ground surfaces of both heel and sole of the shoe.

A further object of the invention is to provide a device which lends an elastic or spring action to the heel and shank, so that the heel of the shoe is held closely to the heel of the foot in walking, and that the shank is prevented from crimping or bending sharply into the hollow of the foot, and that more space be provided above the shank within the shoe when under weight in walking to allow the shank of the foot its natural freedom and action, and as the weight is released from the shoe the shank will by its spring action so diminish the space as to cause the shank part of the shoe to fit closely to the foot, thus greatly prolonging the wear of the shoe and retaining its original shape, integrity, and beauty until worn out.

A still further object of the invention is to provide a device of the character referred to which shall be cheap in cost, simple in construction, and one which shall be durable and capable of being readily attached and re-

moved, substantially as will more fully hereinafter appear, when taken in connection with the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view, in part elevation, of a shoe, together with one embodiment of my invention. Fig. 2 is a bottom view of a shoe or boot heel, indicating the appearance of my improved device when in place. Fig. 3 is an elevation of the embodiment shown in Fig. 1, and Fig. 4 is a vertical sectional view thereof. Fig. 5 is a detail view of the post or stem shown in the preceding figures. Fig. 6 is a side view of another embodiment of my invention, and Fig. 7 is a vertical sectional view thereof. Fig. 8 is a view in elevation of still another form or embodiment, and Fig. 9 is a sectional view thereof. Fig. 10 is a sectional view indicating a further embodiment of the adjustable bearing-plate, and Fig. 11 is a view in perspective of said plate. Fig. 12 is a bottom plan view of shoe, indicating manner of locating or positioning the device with respect to heel center.

My device is designed to be set or placed within an opening or cavity formed in the bottom of the rear part of a solid heel of a boot or shoe, and the same is so constructed and arranged that as the shoe nears the ground the plate first touches the ground and the sensitive vertical resilient action of the device centralizes the weight of the foot and leg upon it and, further, directs the momentum or force within the foot in a direct line forward from the device, and as the weight of the foot in turning forward rests upon the device it forces the latter upward into the heel-opening and carries the surplus weight upon the main heel surface in conformity to the plate, which is an embodiment of the device, which weight centers upon the rear part of the heel forward of the edge of the latter, and centrally with the plate, thus protecting the heel edge and resting centrally back of the highest point of the foot, causing the heel of the shoe to act as a lever upon the heel of the foot when under weight in walking. The action is such as that the shank of the shoe springs downward from the foot in unison with the front edge of the heel and brings the weight upon the sole and rear part of the heel centrally with the plate. This gives an elas-

tic action to the wearing of the front of the heel and releases the shank part of the foot and shoe from strain, and allows the foot its natural freedom within the shoe, while in walking the device is of its own elasticity or action forced outward again beyond the ground surface of the heel, which is its normal position. It has been found most desirable to locate or arrange the device so that its edge shall come as near to the rear edge of the heel as possible, leaving sufficient space to insure its outer integrity, Figs. 1, 2, and 12.

By placing the device with its center intersecting a longitudinal line drawn through the center of the ball-wearing part of the sole and the heel at its rear end, the effect will be to evenly distribute the weight and wear at right angles to such central line, (see *c c*, Fig. 12,) thus removing all tendency to overrunning, and a further effect of my improved device is to give both ease and comfort in walking or standing, and at the same time preserve a uniform elasticity.

In the accompanying drawings I have shown several different embodiments of my invention. Thus in Fig. 1 the numeral 1 represents an ordinary shoe or boot, and 2 the heel and sole thereof. The heel is cut out or formed at the proper point with a double cavity 3—that is to say, a cavity of an enlarged diameter 4 and a smaller diameter 5. My improved device is contained within such double cavity and consists, essentially, of a post or stem 6, an adjustable bearing-plate or disk 7, and a fastening-pin 7^a. In the different embodiments herein shown additional elements are also employed in some instances, as will hereinafter appear. As shown in Figs. 1 to 4, inclusive, the post or stem 6 is formed of a hollow portion 8 and an interiorly-screw-threaded portion 9, the said hollow portion being formed in its sides or walls with diametrically-opposite slots or openings 10 10. Instead of making said post or stem partly hollow, as shown, I may make this portion of the same solid and form an opening entirely through its body from one side to the other for the passage of the securing-pin 7^a. Preferably, however, I form the same partly hollow for the purpose of lightness. Fitted to the lower end of said stem or post by a screw 11 is the bearing plate or disk 7, and surrounding such stem or post is a suitable rubber or other elastic cushion 13. This elastic cushion, it will be observed, is less in height than the pillar or post, thus leaving the slotted portion of said stem or post projecting above the cushion, as shown. The device as thus constructed is inserted into the double cavity in the heel of the shoe, so that the projecting portion of the post or stem will enter the diameter 4, fitting the same, while the remaining portion of the device, including the cushion, will be snugly received into the larger diameter 5 of said cavity. As will be observed in Fig. 1, the bearing plate or disk 7 projects slightly beyond the ground

surface of the heel, so that as the shoe strikes the ground the weight of the wearer will force the device upwardly into the body of the heel, and then as the weight is thrown forward upon the sole just as the heel is leaving the ground the resiliency of the elastic cushion will again force the bearing plate or surface outward to its former position, and the effect of this action is to centralize the weight to the device, and from it it is evenly distributed at right angles from the central line of tread over the heel and toe surface of the shoe. The shank is also reversed by being thrown downward from the foot instead of upward, thus increasing the wear upon the front part of the heel and increasing the wearing-surface of the rear part of the sole. This reverse action of the shank gives the natural freedom and elasticity to the foot and causes the shoe to freely conform to all demands of the foot upon it in walking or standing, while all wearing parts of the shoe are preserved in their original shape until fully worn out. A hole is first made through the side of the heel at the proper point for the securing-pin 7^a, so that it will pass through the slotted portion of the post or stem and the pin closely inserted therein, when the movement above described will be fully understood. When the device is forced inwardly by the weight of the person wearing the shoe, the slots in the post permit the latter to move upon the pin 7^a to a limited extent, and of course the return movement thereof is in like manner permitted on the reaction of the elastic cushion. It is evident that by means of the screw 23, entering the slotted end of the post and coming in connection with the pin-fastening, I may adjust the bearing-plate in such manner as to cause it to project more or less beyond the ground surface of the heel, and also to compensate for any wear thereof that may take place.

As another embodiment of my invention, I employ a metallic shell or casing 15, fitting firmly within the larger diameter of the heel-cavity and inclosing the cushion, for instance, as shown in Figs. 6 and 7. Said shell or casing is entirely open at the bottom, as shown, while its top is partially closed by a circular flange 16, leaving a central opening for the passage of the slotted portion of the stem or post, which in this instance also extends into and fits the smaller diameter of the heel-cavity. In this instance of inclosing shell or casing I construct the elastic cushion of two parts *a b*, slightly cupped at *g*, and intermediate of these parts around the stem or post I interpose a metallic ring or washer 17, which is of an outside diameter to just pass within the shell or casing. In this instance, also, the bearing plate or disk 7 is somewhat thicker than before, and it is also of a diameter to just enter or be received within the walls of the said inclosing shell or casing. Said plate or disk is held upon the lower end of the stem or post by a screw in

like manner, as before. The action of this second construction and arrangement described is that in the movement of the device in and out on the fastening-pin the bearing-plate works somewhat upon the principle of a piston in a cylinder, while the cushioning effect of the cupped parts *a b* is facilitated by reason of its sealed air-space *h* and the interposed washer. Furthermore, the device is rendered more securely water-tight and the rigid character of the shell or casing serves to stiffen and preserve the integrity of the heel, and by burnishing the interior of the casing at its upper end more space is provided for the working of the parts, and also acts as a fastening for the device, and as the device works in and out of the heel, as hereinbefore described, the sections of the cushion are caused to move or contract and expand freely, while no deviation of the device can take place laterally and all danger is removed of any displacement of the plate from the device. The ring or washer 17 besides, in this instance, being of a size just fitting the shell or casing prevents the sides of the latter from becoming bent inwardly from any cause, and thus preserves its shape.

As a still further embodiment, I may form the bearing disk or plate 7 integral with the post, (see Figs. 8 and 9,) and in which case also a rubber cap or nipple 20 is employed to surround said plate or disk. This form renders the device noiseless and of increased elasticity by its more extended sealed air-space. The cap or nipple, is formed with a top flange 21, between which and the bottom thereof the said plate or disk 7 is received when the cap is sprung over the same. In this instance the cupped cushion 13 is employed as a separate part, and which, together with a portion of the cap or nipple, is received into the inclosing shell or case 15. The fastening-pin 7^a is employed as in the previous embodiments described, and the other parts of the device are in most respects identically the same. As shown in Figs. 10 and 11, instead of employing a separate screw for fastening the bearing-plate 7 adjustably to the lower end of the stem or post I may make said plate in the form of a rivet, having the shank 22 thereof exteriorly screw-threaded to enter the lower end of the said stem or post, as in the manner of the screw. In this way I lessen the number of parts and obtain greater strength besides.

The action of my improved device is such as to be entirely independent of the surface or wearing part of the heel—that is to say, when the shoe is on the foot the device is active at every step taken in forcing the back of the heel downward, while the forward part of the heel, as well as the shank of the shoe, is forced in the opposite direction by the fulcrum formed upon the foot at the base of the heel, thus causing the elastic part of the shank and of the device to co-operate with each other in unison. Besides, the shank is supported and the front of the heel is made to wear evenly

with the rear thereof and, furthermore, the shank prevented from bending sharply into the foot and the proper direction given to the weight as it moves forward upon the sole of the shoe to insure its even wear and integrity.

From the foregoing description it is thought the construction and operation of the parts of my improved device will be thoroughly understood, and it is obvious that immaterial changes could be resorted to without departing from the scope intended.

Without limiting myself, therefore, to the precise details of construction shown and described, I claim—

1. A heel plate for boots and shoes, the same comprising a post or stem provided with a vertically elongated slot or opening near its upper end, a bearing plate at the lower end, an elastic cushion, surrounding said post or stem, and a fastening for entering the heel of a shoe and passing through said vertical slot or opening, substantially as described.

2. In a heel plate for boots and shoes, the combination of a solid heel having an opening near the rear edge of the same, a post or stem fitting in said opening, and an elastic cushion, and bearing plate connected therewith, the whole being located so that their centers lie within a line drawn through the center of the weight bearing portion of the heel and shoe, whereby the weight is distributed equally on each side of said line, substantially as shown and described.

3. In a heel plate for boots and shoes, the combination of a solid heel having a small opening near the rear edge, a stem or post adapted to be secured in said opening, an elastic portion, bearing-plate and the whole being located so as to distribute the weight centrally with the tread of the foot, substantially as described.

4. In a heel plate for boots and shoes, the combination with a solid heel having an opening therein leading from the bottom, and an additional opening leading into the heel from the side, a stem or post fitting in said first opening and capable of vertical movement therein, an elastic portion or cushion, and a bearing plate resting against said elastic portion, the whole being located so that the weight is equally distributed on each side of the tread of the foot, substantially as set forth.

5. A heel plate for boots and shoes, the same consisting of a slotted post or stem, a bearing plate adjustable with respect to said stem, an elastic cushion for imparting a yielding action to the plate and stem, and a pin fastening adapted to pass through the heel of a shoe from one side thereof to enter the slot of said post or stem, substantially as described.

6. A heel-plate for boots and shoes, the same consisting of a post or stem partially hollow and slotted on opposite sides, a bearing plate, an elastic cushion, and a pin fastening, substantially as described.

7. A heel-plate for boots and shoes, the same consisting of a post or stem slotted clear

through at its upper portion, and interiorly screw-threaded at its lower end, a bearing plate and a screw-fastening therefor, a cushion, and a pin fastening for entering a heel
5 and passing through said post or stem, substantially as described.

8. The combination in a boot or shoe having a double cavity formed in its heel, at or near the rear edge thereof of a central post or stem
10 extending into said cavity, a cushion surrounding the post within the cavity, a bearing plate partially entering the cavity and normally protruding beyond the ground surface of the heel, and a fastening, substantially
15 as described.

9. The combination in a boot or shoe having formed in its heel a cavity having separate diameters, a slotted post extending into the smaller diameter of said cavity, a cushion

within the larger diameter, and surrounding 20 said post, a bearing plate, and a pin entering the heel at the side and passing through the slots of the post, substantially as described.

10. A heel plate for boots and shoes, the same consisting of a slotted post or stem, a 25 sectional cushion cupped or concaved on contiguous surfaces, and an interposed metal ring or washer, an inclosing shell, a bearing plate entering and working in said shell, and a pin fastening, substantially as described. 30

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

CHARLES N. TYLER.

Witnesses:

E. A. STRICKLER,
A. C. TYLER.