

Feb. 16, 1932.

G. V. ARTHUR

1,845,031

ORTHOPEDIC SHOE

Filed Oct. 2, 1930

3 Sheets-Sheet 1

Fig. 1.

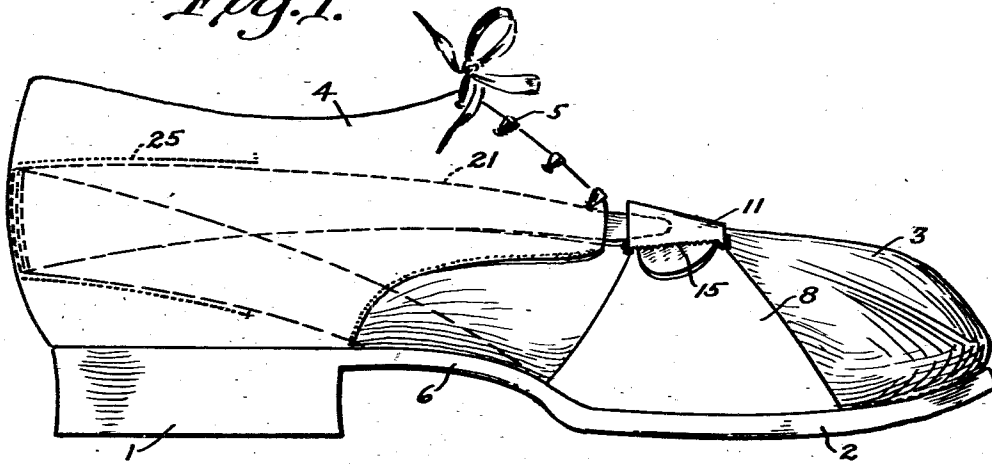


Fig. 2.

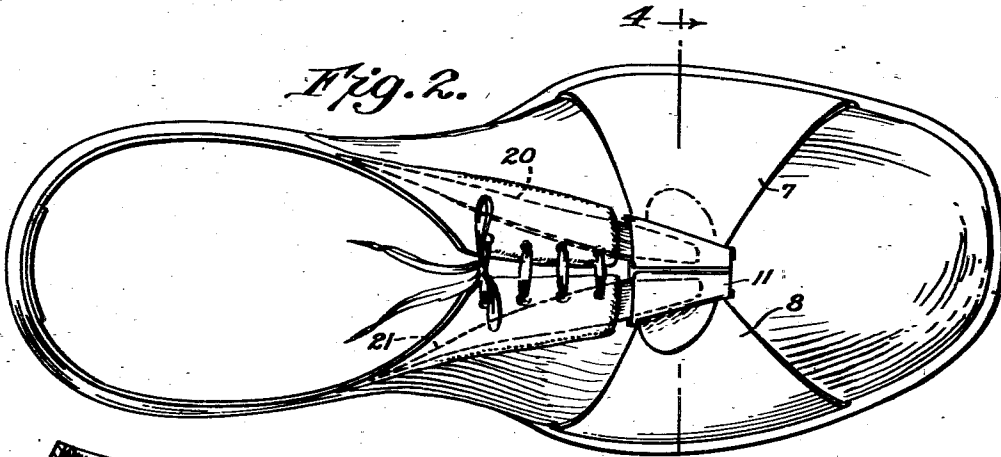
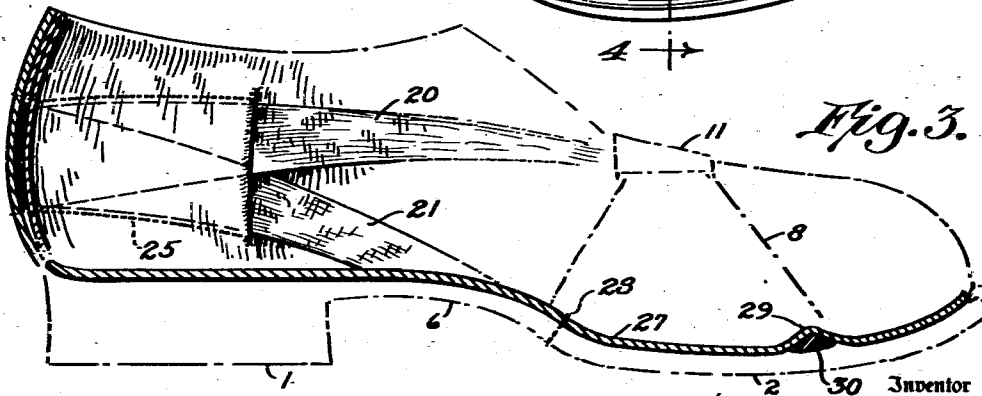


Fig. 3.



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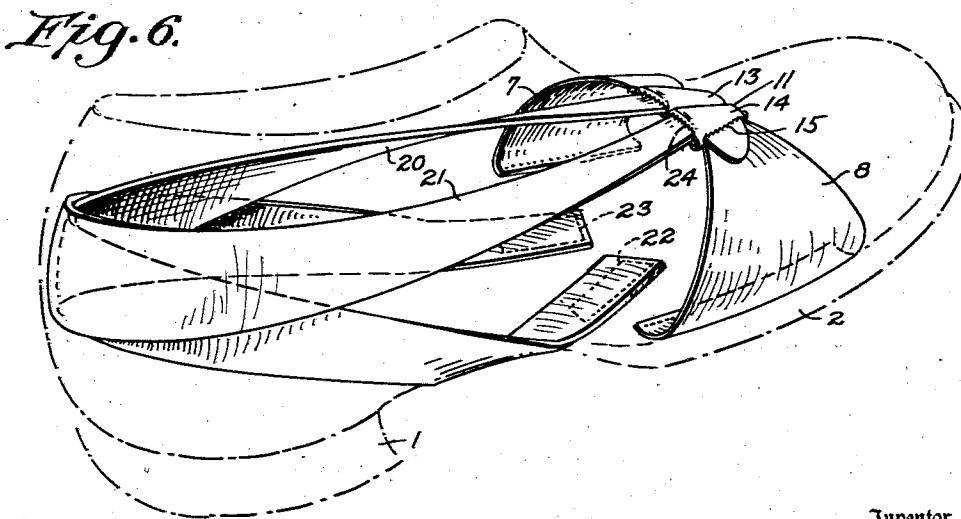
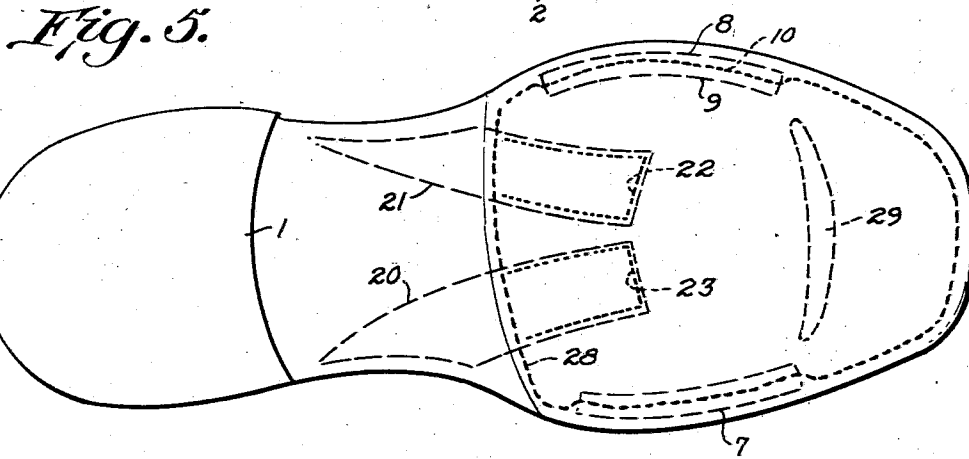
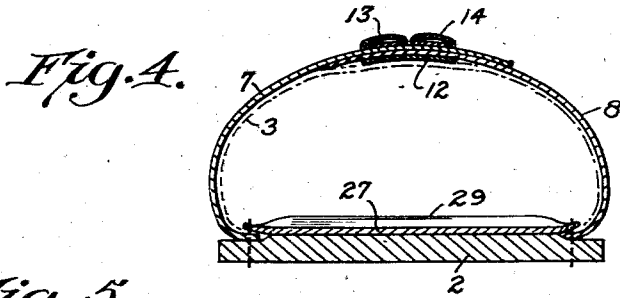
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ORTHOPEDIC SHOE

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Fig. 7.

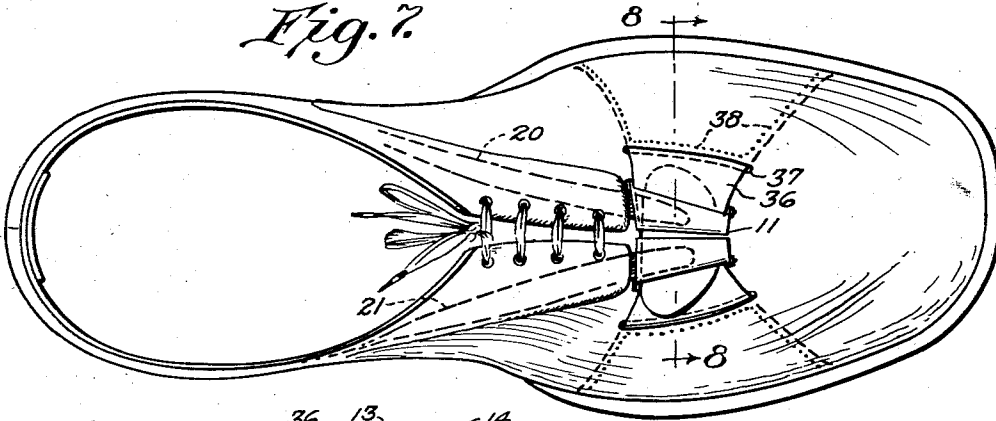


Fig. 8.

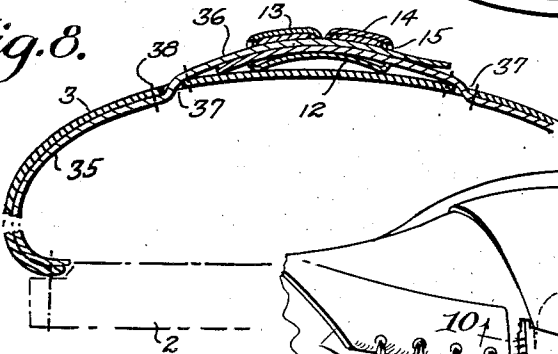


Fig. 9.

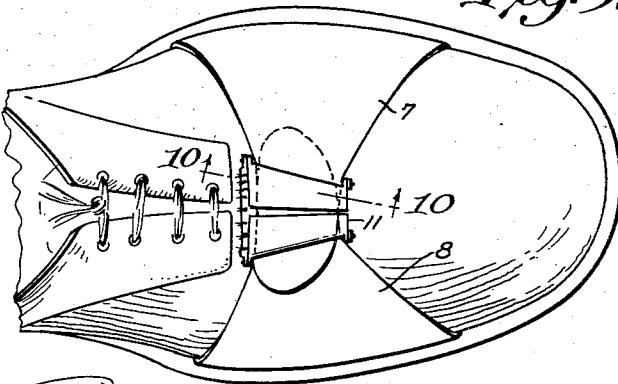


Fig. 10.

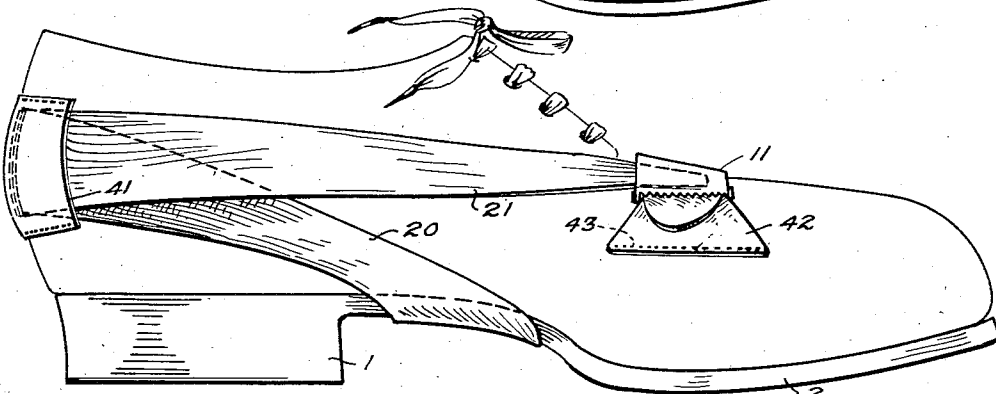
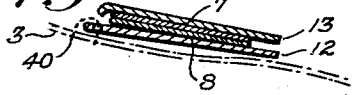


Fig. 11.

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UNITED STATES PATENT OFFICE

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ORTHOPEDIC SHOE

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This invention relates to orthopedic devices in the nature of a shoe for correcting fallen arches, and has for its object to provide a construction which is simple in parts and more efficient in use than those heretofore proposed.

With these and other objects in view the invention resides in the novel details of construction and combinations of parts as will be disclosed more fully hereinafter and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification and in which like numerals designate like parts in all the views,

Fig. 1 is a side elevational view of a shoe to which this invention has been applied;

Fig. 2 is a top plan view of the parts shown in Fig. 1;

Fig. 3 is a vertical longitudinal central sectional view somewhat diagrammatic to illustrate the inner sole construction and the heel straps;

Fig. 4 is a transverse sectional view taken as on the line 4—4 of Fig. 2 and looking in the direction of the arrows;

Fig. 5 is a somewhat diagrammatic bottom plan of a shoe made in accordance with this invention and particularly illustrating the securement of the side and heel straps to the sole and indicating the position of the ridge formed in connection with the inner sole;

Fig. 6 is a perspective diagram illustrating the assembly of the side and heel straps;

Fig. 7 is a view somewhat similar to Fig. 2 but illustrating a slight modification of construction of the side straps;

Fig. 8 is a partial transverse sectional view taken as on the line 8—8 of Fig. 7 and looking in the direction of the arrows;

Fig. 9 is a partial top plan view of a shoe showing a modification of construction wherein the heel straps are omitted;

Fig. 10 is a detailed sectional view taken through the buckle of Fig. 9, as on the line 10—10 thereof and looking in the direction of the arrows; and

Fig. 11 is a side elevational view of a shoe to which a modified form of construction of the side and heel straps has been applied.

Heretofore many devices have been proposed for the aid of fallen arches most of which have comprised bandages or the like to be applied to the foot prior to putting on the shoe, but such bandages either created such added thickness of material that it was difficult to put on a shoe, or there would be such thickness of material between the foot and the shoe that much discomfort would result. Other known devices have comprised shoe attachments which, however, are only supports and do not brace the ligaments of the foot to produce remedial effects. This invention is directed to a shoe having built therein a construction accomplishing the purpose of said bandages in that remedial relief instead of temporary relief is given to the fallen arch. Further such a shoe as now to be disclosed is not unsightly but is so constructed that the fallen arch of the foot will be drawn into a raised position while at the same time the shoe possesses a form of style that will not be unattractive.

This shoe is basically constructed according to general principles of shoe manufacture in that there is provided the usual heel 1, sole 2, forward upper or vamp 3, sides or quarters 4, and lacing 5, but the sole 2, particularly at the arch or shank 6 is made more than usually flexible as by the use of soft leather or the like. Referring particularly to Figs. 1, 2 and 5 such a shoe has exteriorly applied thereto a pair of short side straps 7 and 8 each of tapering width whereby there is produced a relatively wide end such as 9, which may be stitched as at 10 between the sole and the upper, and a relatively narrow end that may be readily passed through a buckle generally indicated by the numeral 11, the smaller free ends of said straps being passed through the buckle from opposite sides as will be readily understood. Each of these straps is of sufficient length to pass entirely through the buckle and to permit the extreme ends being grasped and pulled to create a tension across the forward part of the foot when it is in the shoe.

The buckle 11 may be of any suitable type, there being illustrated a device comprising a base plate 12 having secured thereto a pair

of clamping members 13 and 14 each of which latter has means such as teeth 15 to engage the ends of the straps 7 and 8 and hold them in adjusted and tensioned position.

- 5 The clamping members may be hinged to the base member and, instead of the teeth 15, be provided with any other suitable means for wedging or otherwise securing the ends of the straps.
- 10 A pair of heel straps is provided with one end of each strap rigidly secured to the sole of the shoe and the free ends adapted for engagement with the buckle 11. That is to say, there is a strap 20 one end of which is
- 15 stitched as at 22 to the sole, said strap being of a length to pass back of the heel of the foot and forwardly on the opposite side of the shoe to engage the member 13 of the buckle 11 (see Fig. 6). Then there is a second
- 20 strap 21 one end of which is sewed as at 23 to the sole, said strap being of a length to pass back of the heel of the foot (crossing the other strap 20) and thence forwardly having its other free end engaged by the member
- 25 14 of said buckle, the engagement of the free ends with the buckle being accomplished in any convenient manner such as by the serrated edge 24 of each of the members 13 and 14, or by other suitable wedging or clamping action. Preferably the straps
- 30 20 and 21 pass through a tunnel formed at the rear of the shoe by slitting the leather lining and providing limiting stitching 25 or the like so that the straps will not come in direct contact with the foot as will be
- 35 readily understood from Fig. 3. According to this preferred form of the invention, the side straps 7 and 8 are disposed exteriorly of the shoe but the heel straps 20 and 21 are
- 40 disposed within the shoe, the forward ends of the latter passing through suitable slots in the upper 3 so that said ends may be engaged by the buckle 11.

- The inner sole 27 is secured to the main sole 2 at a single line of transverse stitching
- 45 28 at the junction of the sole with the arch or shank of the shoe as will be clear from Figs. 3 and 5. The inner sole is provided with a ridge 29 extending upwardly to substantially fit the space between the ball of
- 50 the foot and the pads of the toes, said ridge being slightly curved as shown in Fig. 5 for this purpose. The ridge may be formed in any convenient manner but is shown in
- 55 Fig. 3 as created by a wedge 30 disposed between the inner and main soles.

- Referring to Figs. 7 and 8 there is shown a modified form of construction wherein the heel straps 20 and 21 are provided as herein-
- 60 before described, but the side straps are applied to the shoe in a different manner whereby said latter straps are partly inside and partly outside of the shoe. In other words, each of the side straps has its larger portion
- 65 35 disposed interiorly of the shoe, the smaller

portion 36 being passed through a slot such as 37 in the upper 3 to be engaged exteriorly of the shoe by the buckle 11. Lines of stitching 38 secure the portion 35 to the upper 3.

In Figs. 9 and 10 is illustrated a modified form of construction wherein the heel straps 20 and 21 are omitted and therefore the buckle 11 is secured as by the stitching 40 directly to the upper 3, the buckle otherwise being substantially the same as hereinbefore described but adapted to hold only the free ends of the side straps 7 and 8.

The modification shown in Fig. 11 provides the heel straps which, however, are applied exteriorly of the shoe but otherwise similarly formed to the straps 20 and 21. Instead of the interior tunnel or guide formed as hereinbefore mentioned, there is provided an exterior tunnel or guide formed by an extra piece of leather 41 stitched along its upper and lower edges to the outside of the back of the shoe. Also, the side straps 7 and 8 have been materially shortened. That is to say, instead of the strap 8 as shown in Fig. 2 there is provided a strap 42, the enlarged end of which is secured as by the stitching 43 at a point substantially half way from the buckle 11 to the sole whereby substantially the same physical effect is obtained with a saving of strap material, and the resultant construction will be of pleasant appearance in its simulation of a bow. The narrowed portion of each tapered strap constituting a tongue is engaged by the buckle in the same manner as the corresponding tongue portions of the straps shown in the other figures of drawings.

Other modifications of the invention will be apparent without particular illustrations, such as the provision of the short side straps 42 exteriorly of the shoe and the heel straps 20 and 21 disposed interiorly thereof. Further, the constructions shown in Figures 8 and 11 may be somewhat combined; that is the members 35 and 36 may be separate and secured together and to the upper 3 by a line of stitching as shown at 43 thus eliminating the slots 37 in said upper. Also the side straps and the heel straps may be manufactured and sold separately from the shoe so that said straps could be sewed to any type of shoe by a competent shoe repair man, and obviously the double heel straps could be replaced by a single strap.

In application the foot is placed within the shoe, the side straps as well as the heel straps are then pulled to create considerable tension, and then the adjusted and tensioned straps are secured by the buckle 11. The side straps press the foot to transversely arch the bony structure thereof, and the heel straps coupled with the ridge 29 of the inner sole possess the faculty of creating a longitudinal tension on the foot to raise the medial arch thereof. Thus it will be seen that

by this invention the foot is subjected to remedial treatment while confined in a substantially ordinary appearing shoe without any additional thicknesses of a bandage or the like interposed between the foot and the shoe. Further, except for the flexible arch which is built in the specially prepared shoe, it is not necessary to purchase a special shoe, since the straps may be supplied independently for application to the style of shoes worn by the sufferer, and in this connection said straps can be applied to the shoes already possessed by the patient.

15 Fallen arches need not be braced at all times, but they should be braced when the muscles have become fatigued, and since this time will vary in most all cases it will be apparent that a shoe to which this invention has been applied will have particular advantage over bandages which are not readily accessible, especially in view of the fact that the side and heel straps may be relieved of their tension through the buckle or other securing means. For example, the straps may be tightened in the early morning when strains are placed upon the foot, then they may be loosened during the middle of the day or lunch period, and again tightened after lunch. In other words, the straps may be loosened at times of the day when no strains are on the foot thus providing rest for the foot as well as relief from the tension of the straps. Further, the tension on the straps is easily varied whereby the tension may be made in accordance with the strain to which the foot is subjected during different stages of work performed by the patient.

40 It is to be particularly observed that the side straps are provided at the correct positions on the shoe to exert, when under tension, a force which will transversely arch the foot at the base of the toes, thereby raising the transverse arch of the foot. In shoes provided with lacing, the lacing is positioned at the instep which is too far rearward of the foot to accomplish this remedial action on the transverse arch, even in shoes as illustrated with the blucher construction. The side straps may be sufficient for some foot ailments but it is found more beneficial to use the additional heel straps which are of special use in bracing the medial arch.

55 It is obvious that those skilled in the art may vary the details of construction as well as arrangements of parts without departing from the spirit of the invention, and therefore it is not desired to be limited to the foregoing except as may be required by the claims.

60 What is claimed is:—

1. An orthopedic device comprising a pair of opposed straps disposed on a shoe forward of the lacing; a heel strap secured at one end to the sole of the shoe; and means engaging

the free ends of all of said straps for holding the same under tension.

2. An orthopedic device comprising a pair of opposed straps disposed on a shoe forward of the lacing, each strap secured at one end to the upper of said shoe; a heel strap secured at one end to the sole of the shoe and extending along both sides of the shoe; and means disposed forward of the lacing and engaging the free ends of all of said straps for holding the same under tension.

3. An orthopedic device comprising a pair of opposed straps disposed exteriorly of a shoe forward of the lacing; a heel strap secured at one end to the sole of the shoe and extending interiorly along both sides of the shoe with the free end of the heel strap passing through a slot in the shoe upper adjacent said pair of straps; and means engaging the free ends of all of said straps for holding the same under tension.

4. An orthopedic device comprising a pair of opposed straps disposed on a shoe forward of the lacing; a pair of heel straps each secured at one end to the sole of the shoe, and each extending along both sides of the shoe, each crossing the other strap in a tunnel formed at the back of the shoe, the free ends of said straps terminating adjacent the first mentioned pair of straps; and means engaging the free ends of all of said straps for holding the same under tension.

5. An attachment for a shoe comprising a plurality of straps two of which are adapted to be secured at their outermost ends to a shoe in transverse relation thereto, the remainder of said plurality of straps having an end adapted to be secured to the shoe and passing around the heel of a foot to form a longitudinally extending loop with the free strap end terminating adjacent the transverse straps; and a fastener securing the innermost ends of the transverse straps as well as the free end of the heel strap.

6. An attachment for a shoe comprising a plurality of straps two of which are tapered providing a narrow tongue at one end and a wide edge portion at the other, the wide edge portions being outermost and adapted to be secured to a shoe to position said tapered straps in transverse relation thereto, the remainder of said plurality of straps having an end adapted to be secured to the shoe and passing around the back of a foot to form a longitudinally extending loop with the free strap end terminating adjacent the tongues of the transverse straps; and a fastener securing the tongues of the transverse straps as well as the free end of the heel strap in crossed relation.

In testimony whereof I affix my signature.

GILBERT V. ARTHUR.