Feb. 22, 1938. J. T. TEBBUTT 2,109,324

SHOE

Filed Feb. 11, 1936 3 Sheets-Sheet 1

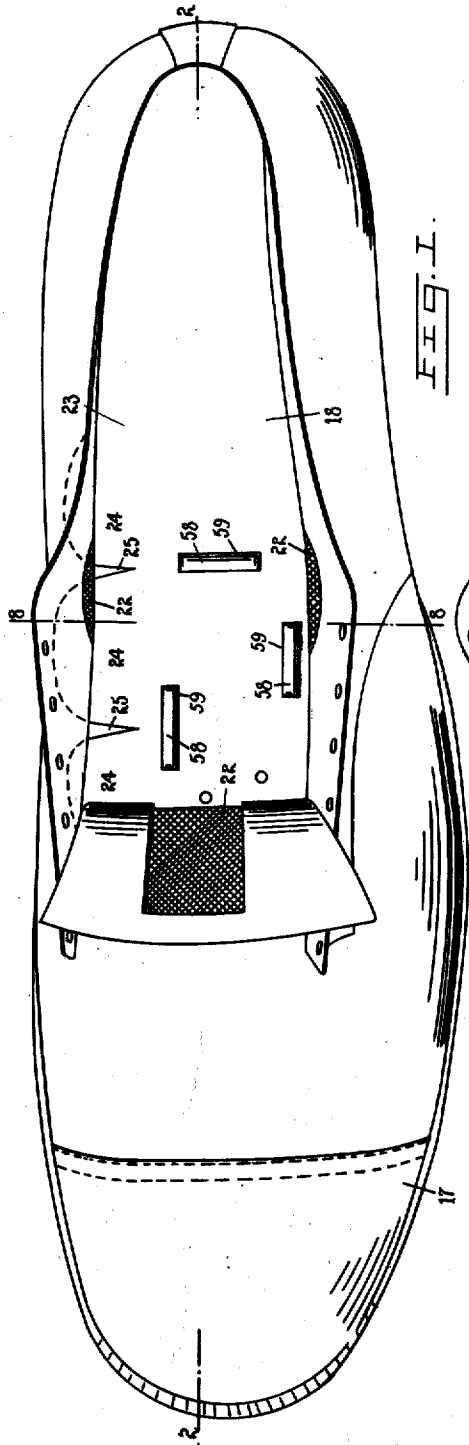


FIG. 1.

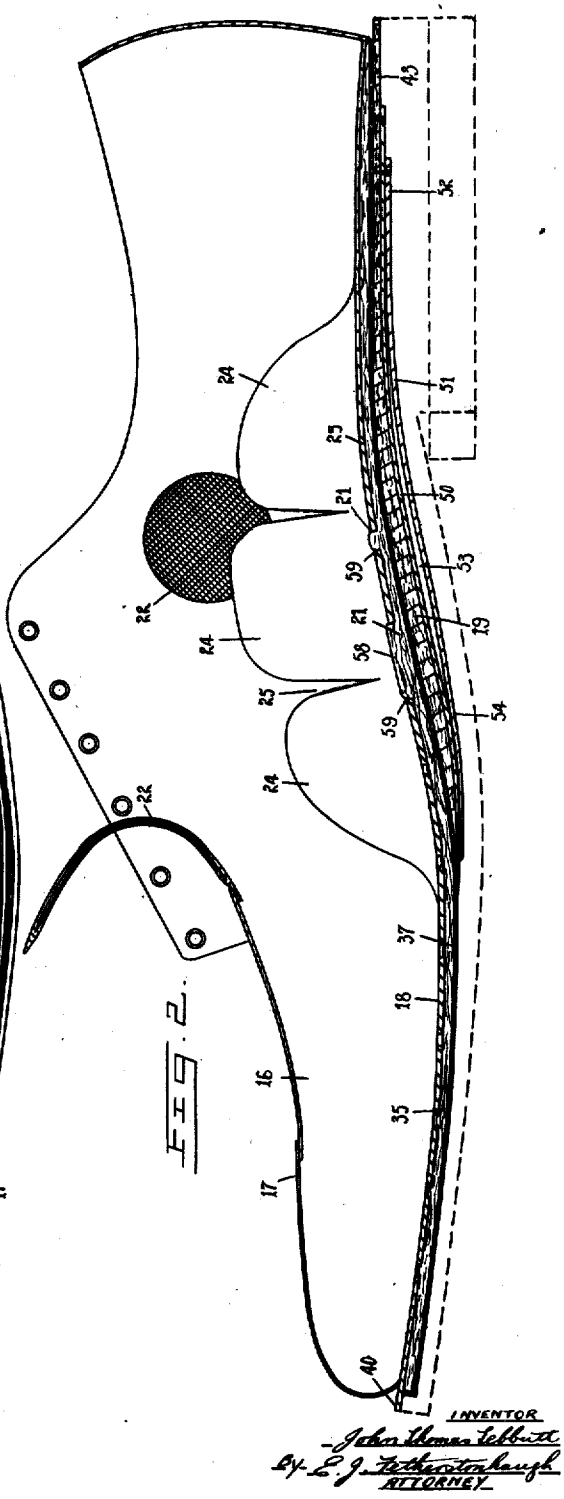


FIG. 2.

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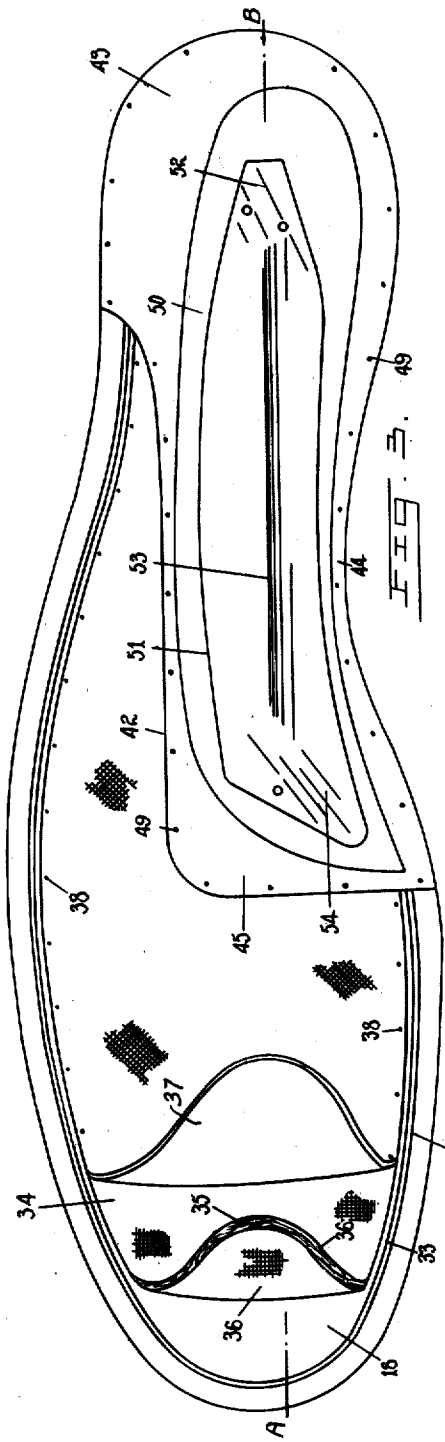


FIG. 3.

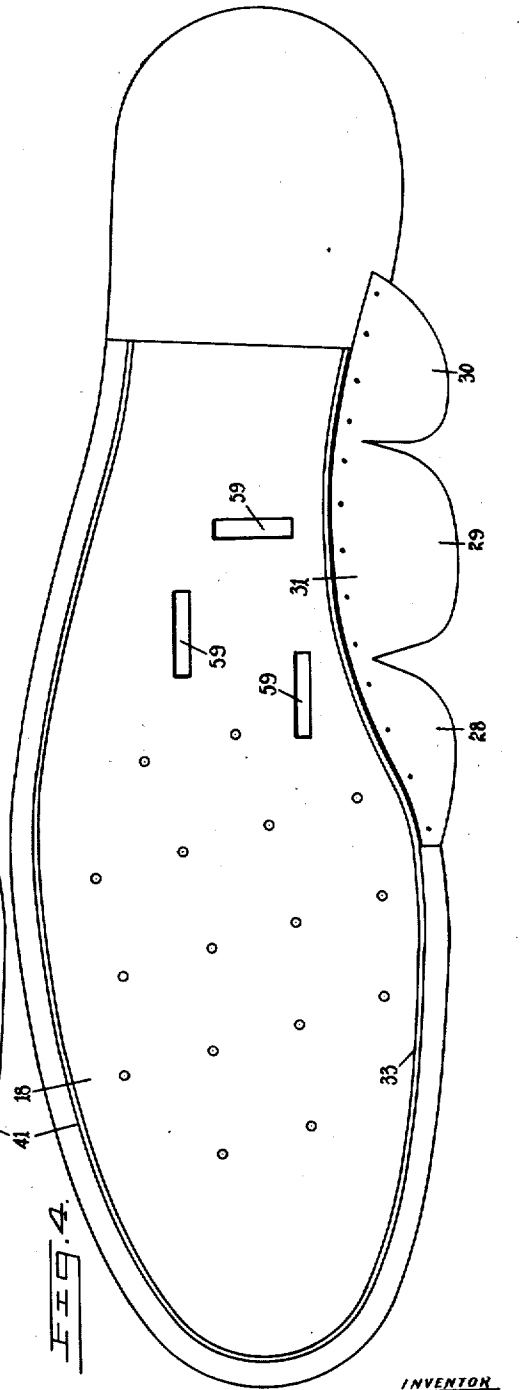


FIG. 4.

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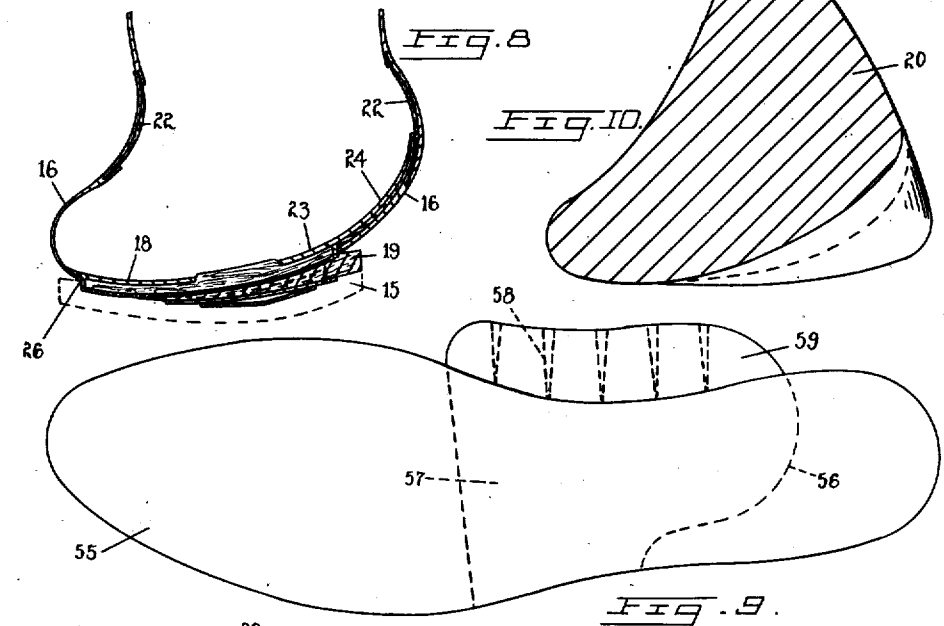


Fig. 8

Fig. 10.

Fig. 9.

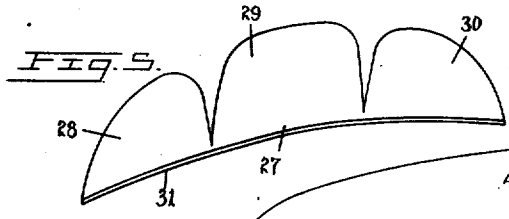


Fig. 5.

Fig. 6.

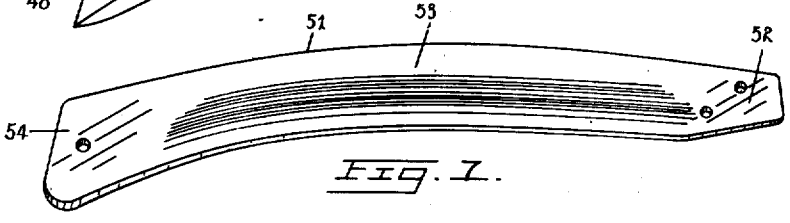


Fig. 7.

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Patented Feb. 22, 1938 2,109,324

UNITED STATES PATENT OFFICE

2,109,324

SHOE

John Thomas Tebbutt, Three Rivers, Quebec, Canada

Application February 11, 1936, Serial No. 63,380

10 Claims. (Cl. 36—8.5)

The invention relates to shoes, as described in the present specification and illustrated in the accompanying drawings that form part of the same.

The invention consists essentially in the circulation and diffusion of gases within the shoe and the flexibility of the foot supporting parts contributing to the aforesaid circulation and to the lifting of the arch with comfort to the wearer, as pointed out in the claims for novelty following an explanation of the structural details and the operation.

The objects of the invention are to maintain the feet of the wearer in a sweet and wholesome condition and thereby eliminate offensive odors and rankness due to excess exudations from the skin and any foulness appearing on the surface and resulting from internal troubles and in fact to medicate the shoe thoroughly by the natural muscular movements of the feet in pumping air and remedial gases constantly about the feet; to insure a handsome and trim appearance that is so necessary to a well dressed person and yet include all the required provisions for the peculiarities of the person's feet; to furnish shoes to the people at large that materially aid in guarding against the development of bad feet conditions, and generally to bring about conditions of comfort to the public, especially in regard to the state of their feet.

In the drawings, Figure 1 is a plan view looking in the shoe showing the ventilated insole and arch extensions and the cushion pads for medicaments.

Figure 2 is a longitudinal sectional view on the line 2—2 in Figure 1.

Figure 3 is a plan view of the inside layers of the build-up of the shoe below the insole on the welt foundation and minus the outsole.

Figure 4 is a plan view showing a detail of the insole.

Figure 5 is a detail of the aluminum plate.

Figure 6 is a perspective view of the equalizer or lift insert.

Figure 7 is a detail of the channelled metal shank.

Figure 8 is a cross sectional view on the line 8—8 in Figure 1.

Figure 9 is a plan view of the modified form of the arch support.

Figure 10 is a detail of an anatomical last, shown in cross section.

Like numerals of reference indicate corresponding parts in the various figures.

Referring to the drawings, the shoe is made up of the outsole 15, the upper 16, including the vamp and toe cap portion 17, and the insole 18 attached to said upper, but it is the interior of the shoe that is the greatest concern, and the only difference in the outsole part of it is the lift 19, which raises the insole and the interior of the shoe on the inner side thereof to support the arch of the foot. This is done by an anatomical last 20 and adding a wedge hereinbefore termed the lift, frequently mentioned as the equalizer, which is an insert of leather, and this insert of leather disappears transversely to a thin edge and also disappears to a thin edge at each end, being at its thickest towards the front end and gradually shelving off towards the other end and to the edge.

It will thus be seen that the raised side of the shoe, that is to say, the inside, straightens out the foot of the wearer, so that the pumping action in distributing the vapor of medicated substances is natural and efficient whereas otherwise it would not be so effective, but by raising the inner side and allowing the foot to be moved to a natural position, the muscular activities of the wearer in moving about and walking result in all the actions that produce a suction power for drawing the vapors from a number of cubes 21 and pads 22 containing iodine, alcohol, menthol, castor-oil, mint and thyme which is a compound of a non-acid and vegetable nature, for distribution of vapors, and in fact circulating them throughout the shoe and around and about the foot.

The shoe 15 is constructed to give the maximum of support to the key bones of the feet and to carry out the objects aforesaid, the anatomical last 20 is cut away transversely on the inner side at the arch from the normal lines shown in the dotted lines to the solid line.

The inner sole 18 is skived at the edge in the usual manner with the leather surface 23 on the inner side which is extended into the lugs 24 in the form of the splits 25, these lugs being of a size and shape to conform to the cut away portion of the last 20.

The inner sole is blocked or moulded to the last, which naturally raises the center of the inner sole from the flat at the outer edge 26 to a maximum of the top of the lugs 24. The edges of the lugs are skived on the flesh side to a thin edge.

An aluminum supporting plate 27 of the same size as the extension piece 24 of the inner sole is cut to form sections 28, 29 and 30 complementary to lugs 24 and is moulded to the shape

of the last and the extension piece, a flange 31 substantially horizontal secures the plate 27 to the under surface of the inner sole by the rivets or nails 28.

The lugs 24 of the inner sole may be secured to sections 28, 29 and 30 of the plate 27.

Within the area of the skived edge of the under side of the inner sole 18 bounded by the skived edge 33, a cushion pad 34 is placed and extends the full length of the inner sole, this pad or cushion 34 is formed of a layer of felt 35 and outer coverings 36 of silk.

A sheet of asbestos 37 is then placed over the pad or cushion 34 on the under side and the cushion and asbestos sheet may be held to the under surface of the inner sole in any suitable manner, such as by the nails or tacks 38 or they may be cemented or pasted in place. The thickness of the cushion 34 and asbestos sheet 37 combined are equal to the depth of the skived edge 33 of the inner sole 18.

After the upper 16 and the welt 40 are secured to the lip 41 of the inner sole in the usual manner and the welt pressed out, a leather equalizer 19 is then secured to the under side of the inner sole 18 and cushion pad 34.

The leather equalizer 19 extends into the heel portion 43, the narrowed center is the arch portion 44 and the forward spread portion 45 is in line with the ball of the foot.

The equalizer 19 is wedge shape in transverse section and the depth on the inner and outer edges is equal to that cut away from the last 20.

The thickness along the lifting edge 46 of the equalizer increases slightly from the spread portion 45 to the rear of the arch portion 44, where it is tapered to about half the thickness along the edge 47 to the forward edge 48 where it is tapered off to a knife edge in line with the ball of the foot.

The depth and shape of the equalizer 19 is equivalent to the amount of material taken off the last 20 and is intended in the shoe construction to correspond with the material.

The equalizer is secured to the outer surface of the cushion 34 and inner sole 18 by the nails 49. Against the outer surface of the equalizer 19 an aluminum base plate 50 is secured and this base plate is smaller in size but follows generally the shape of the leather equalizer 19 and is secured to the equalizer centrally with the longitudinal axis A.B. of the shoe and forms a base on which is mounted the steel truss 51 moulded to conform to the last 20 on the axis A.B. and has a flat heel portion 52 extending into a substantially trough shaped arch portion 53 and terminates in a flat spread portion 54 under the ball of the foot.

The outer sole 55 is now attached to the welt 40 in the usual manner closing and providing a solid base for the arch support.

In Figure 9 a modified form of support is shown. In place of the leather of the inner sole 18 being extended, an extra inner sole 55 is provided with an aluminum support 56 set between the sole 18 and sole 55.

The aluminum support 56 conforms in the flat portion 57 to the shape and mould of the inner sole 55, while the extension portion is moulded to the arch portion of the last 20 and is slotted inwardly from its upper edge into sections 58 in the same manner as the leather lugs 24 of the inner sole 18.

A covering 59 is provided to the support 56 to protect the foot and shoe from the edges of the projecting sections.

With this construction, a shoe is produced which is designed from the very first operation to give the maximum of support and comfort, and for this reason the last is prepared and cut away so that the shoe built on the last will conform to and support the os calcis, the scaphoid, the astragalus, the cuneiform and the metatarsal bones forward to the ball of the foot, and by moulding the inner sole with its arch extension cut in sections, the cushion pad, the equalizer and the aluminum and steel trusses to this last, the whole shoe holds and supports these bones of the feet in their proper relationship and so long as these bones retain their position there can be no deformation of the feet.

The same applies to the shoe itself for when it is built on a last, which is anatomically true to the arch of the foot, the foot and the shoe work together, and no deformation of either of them can take place.

The cubes 21 contain the desired ingredients and are supplied with silk wrappers 58 to constitute an absorbent and the latter are pushed through the apertures 59 in the insole, still containing the compound, the effluvia of which materially helps the foot to comfort and health. The pads 22 also are contained in quilted silk, forming inserts at various places in the lining. The sanitary effect of the sole absorbent is also very active in spreading the medicine for the ease of the fight against such foreign influences as may enter the shoe.

The inner sole being first moulded to the anatomical last and having the arch extension with its aluminum supporting plates insures the absolute comfort of support, as the lugs of the extension give a degree of elasticity beneficial to the muscles which hold and operate the key bones of the arch and thoroughly medicate the foot.

In placing the steel truss with its aluminum base between the outer sole and the equalizer, the strain between the heel and the ball of the foot is amply provided for while the thrust is distributed throughout the equalizer, and the cushion acts as a shock absorber to the inner sole.

The equalizer further takes up the amount taken from the anatomical last so that the outer sole will be a natural tread and a base between the heel and the ball of the foot for the built up arch allowing the metal truss to have a level balance giving a true upright support while transferring the support to the moulded upper surface of the inner sole and the arch of the foot. The placing of the equalizer between the inner sole and the arch supporting truss allows for distribution of the support without the truss working into and through the inner sole and at the same time allows for the outer sole to retain a normal tread line and generally keeps the uppers and soles free from distortion while holding the bones of the feet in place and preventing deformation and insuring the muscular movements required to circulate the curative vapors.

What I claim is:—

1. A shoe comprising an outsole, an insole having circulatory openings, a medicated interim sole forming an insert between the outsole and insole, and a troughed stiffener introduced within the shank of the shoe and constituting a distributing passage for the vapors from said interim sole.

2. In shoe construction, an inner sole having a skived edge and an extension on the inside pro-

jecting up the arch section of the shoe and divided into a plurality of tabs, each tab being sheathed with a metallic plate rearwardly attached and forming an arch support from the skived edge of the sole, an upper suitably attached to said inner sole, the latter having a longitudinal recess containing an absorbent, an outer sole, a shank, and a shank base upwardly thickened on the inside and forming an insert on the upper side of the shoe to equalize the structure.

3. In a shoe construction, an inner sole having a skived edge and an extension on the inside projecting up the arch section of the shoe and divided into a plurality of tabs, a metal plate complementary to said extension and divided into tabs and having a flange at its lower edge for attachment of the plate to the skived edge of the inner sole, an upper suitably attached to said inner sole, the latter having a longitudinal recess containing an absorbent, an outer sole, a shank, and a shank base upwardly thickened on the inside and forming an insert on the upper side of the shoe to equalize the structure.

4. A shoe comprising an upper, an inner sole having a recessed underside, a metallic arch extension from the inner side, a steel shank mounted on a light metal base attached to a leather filler, a cushion pad having asbestos insulation introduced in said recess, and an outer sole closing said recess from the underside.

5. In a shoe construction, an upper, an inner sole having a recessed under side, a metallic arch extension from the inside, a steel shank mounted on a light metal base attached to a leather filler, said filler being upwardly thickened on the inside and moulded to the inner longitudinal arch of the foot, a cushion pad having asbestos insulation introduced in said recess, and an outer sole closing said recess from the underside.

6. In a shoe construction, an inner sole having a skived edge and an extension on the inside and moulded to the arch of the foot, said extension being divided into a plurality of tabs, a metal plate moulded complementary to said extension and secured thereto in the under side and to the skived edge of the inner sole, an upper and a welt suitably attached to said inner sole, the latter having a longitudinal recess within the lip of said skived edge, a cushion pad within said recess, an equalizer secured to said inner sole and cushion being upwardly thickened on the inside and shaped to the moulded inner sole on its upper side from a substantially level under side, a steel truss mounted on the under side of said equalizer, and an outer sole secured to said welt and finishing the structure.

7. In a shoe construction, an inner sole having a skived edge and an extension on the inside and moulded to the arch of the foot, said extension being divided into a plurality of tabs, a metal plate moulded complementary to said extension and secured thereto on the under side and to the skived edge of the inner sole, an upper and a welt suitably attached to said inner sole, the latter having a longitudinal recess within the lip of said skived edge, a cushion pad and an asbestos insulation within said recess, an equalizer secured to said inner sole and cushion being upwardly thickened on the inside and shaped to the moulded inner sole on its upper side from a substantially level under side, a steel truss mounted on the under side of said equalizer, and an outer sole secured to said welt and finishing the structure.

8. In a shoe construction, an inner sole having a skived edge and an extension on the inside and moulded to the arch of the foot, said extension being divided into a plurality of tabs, a metal plate moulded complementary to said extension and secured thereto on the under side and to the skived edge of the inner sole, an upper and a welt suitably attached to said inner sole, the latter having a longitudinal recess within the lip of said skived edge, a cushion pad within said recess, an equalizer secured to said inner sole and cushion having a heel portion, a narrow arch portion on the inner edge and an inwardly spread forward portion extending into line with the ball of the foot, and moulded to the arch of the foot on its upper side from a substantially level under side, a steel truss mounted on the under side of said equalizer, and an outer sole secured to said welt and finishing the structure.

9. In a shoe construction, an inner sole having a skived edge and an extension on the inside and moulded to the arch of the foot, said extension being divided into a plurality of tabs, a metal plate moulded complementary to said extension and secured thereto on the under side and to the skived edge of the inner sole, an upper and a welt suitably attached to said inner sole, the latter having a longitudinal recess within the lip of said skived edge, a cushion pad within said recess, an equalizer secured to said inner sole and cushion being upwardly thickened and shaped to the moulded inner sole on its upper side from a substantially level under side, a steel truss having a level heel portion and mounted on the under side of said equalizer, a trough shaped arch portion, spreading out to a level portion under the ball of the foot, and an outer sole secured to said welt and finishing the structure.

10. In a shoe construction, an inner sole having a skived edge and an extension on the inside and moulded to the arch of the foot, said extension being divided into a plurality of tabs, a metal plate moulded complementary to said extension and secured thereto in the under side and to the skived edge of the inner sole, the latter having a longitudinal recess within the lip of said skived edge, a cushion pad comprising a layer of felt between outer coverings of silk, an equalizer secured to said inner sole and cushion shaped to the moulded inner sole, on its upper side from a substantially level under side, a steel truss mounted on the under side of said equalizer, and an outer sole secured to said welt and finishing the structure.

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