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ARCH SUPPORT FOR FOOTWEAR

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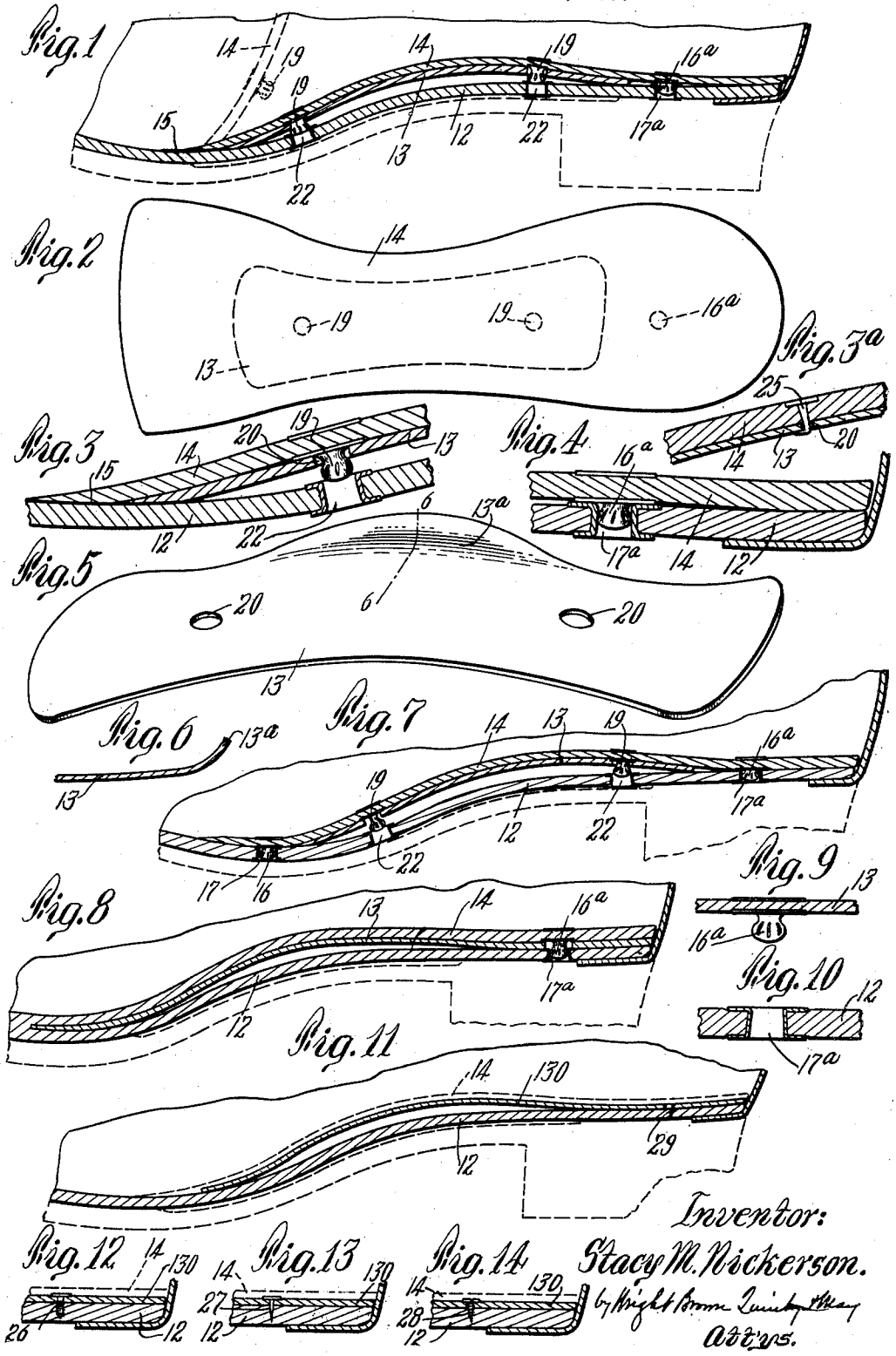

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ARCH SUPPORT FOR FOOTWEAR

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This invention relates to arch-supporting means useful in remedial treatment of various anatomical weaknesses or defects of the human foot.

The invention is embodied in an arch support which includes a permanent insole and a resilient sheet metal shank piece supported by the top surface of a portion of the insole and having a resiliently yielding top surface suitably diversified to adapt it to act as a remedial or corrective support for the shank portion of a foot bottom, means being provided for interchangeably locating differently formed and characterized shank pieces in a predetermined operative position in a shoe, so that a salesman in a shoe store, or the owner of a shoe, may combine with the shoe such forms of remedial or corrective shank piece as may be required.

Of the accompanying drawing forming a part of this specification,—

Figure 1 shows in longitudinal section a portion of a shoe having an arch support embodying the invention, said support including a top or sock layer.

Figure 2 is a top plan view, showing the top or sock layer by full lines, and the shank piece by dotted lines.

Figures 3 and 4 are enlargements of portions of Figure 1.

Figure 3*a* is a view similar to a portion of Figure 3, showing a modification.

Figure 5 shows the shank piece in perspective, considerably enlarged, and provided with a wing portion.

Figure 6 is a section on line 6—6 of Figure 5.

Figure 7 is a view similar to Figure 1, showing a different connection between the forward end of the top layer and the inner sole.

Figure 8 is a view similar to Figure 1, showing a different embodiment of the invention.

Figures 9 and 10 show separately enlargements of portions of Figure 8.

Figure 11 is a view similar to Figure 1, showing another embodiment of the invention.

Figures 12, 13 and 14 are enlargements of a portion of Figure 11, showing modifications.

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

My improved arch support includes the heel portion and the curved shank portion of the permanent insole 12 of a shoe, a curved shank piece 13, of resilient sheet metal, preferably steel, having any desired remedial or corrective form as to its top surface, and a curvature more abrupt than that of the top surface of the curved shank portion of the insole, so that when the ends of the shank piece 13 bear on the insole, as indicated by Figures 1, 7, 8 and 11, the major portion of the shank piece is free to yield to foot pressure, its resistance to such pressure depending on the resilience of the shank piece.

I provide means, which may be variously embodied, for releasably confining the shank piece in the shoe, so that different shank pieces, having different characteristics as to resilience or pressure resistance, and remedial or corrective form, may be used interchangeably, said means being adapted to confine the shank piece in a predetermined operative position, causing the end portions of the shank piece to bear on portions of the top surface of the insole at opposite ends of the curved shank portion thereof. The curvature of the shank piece 13 is such that its major portion is spaced above and movable toward and from the shank portion of the insole, as indicated by Figures 1, 7, 8 and 11.

The top surface of the shank piece may be variously diversified to impart thereto a remedial or corrective form. For example, the top surface may be curved crosswise, as shown by Figures 5 and 6, to provide an upwardly

curved wing 13*a* at one longitudinal edge and between the end portions of the shank piece.

The confining means employed enables any one of a plurality of differently characterized shank pieces to be located in an operative position, either by a shoe salesman or by the wearer of the shoe.

In the preferred embodiments of the invention shown by Figures 1 to 10, the confining means includes a flexible top or sock layer 14, bearing on the top surface of the shank piece and conformable thereto by foot pressure.

The top layer 14 is formed to bear on the bottom surface of that portion of the foot which includes the heel, shank and ball thereof, and is secured at its forward end to the fore portion of the insole, so that its rear end may be displaced upwardly to permit the insertion and removal of the shank piece.

The top layer may be formed separately from the insole and secured thereto by forward end connections provided either by stitching or cementing its forward end to the fore part of the inner sole, as indicated by Figure 1, 15 designating a cement connection.

The forward end of the top layer 14 may be secured to the fore part of the insole by a separable forward end connection including a member 16, fixed to said forward end, and a complemental member 17, fixed to the inner sole. Said members may constitute the stud and socket members of a well-known snap fastener, or they may be otherwise organized.

The rear end of the top layer 14 may be separably secured to the heel portion of the insole by similar members 16*a* and 17*a*, as shown by Figures 1 and 7, said members being shown enlarged by Figure 4.

The top layer 14 may be integral with the insole and formed by horizontally splitting the sole from its heel end to its ball portion, as shown by Figure 8. In this embodiment the forward end connection is provided by the substance of the sole at the forward end of the split, and the fastener member 16*a* is fixed to the heel end of the shank piece, as best shown by Figure 9.

The shank piece 13 may be releasably secured to the top layer 14 by fastener members 19, similar to the members 16 and 16*a* fixed to the top layer and complemental members 20 on the shank piece, the members 20 being provided by apertures or holes in the shank piece receiving the members 19.

When the top layer 14 is swung upward, the shank piece may be conveniently engaged therewith and separated therefrom, and when the top layer is moved to its operative position, the shank piece 13 is operatively confined in position to afford a corrective or remedial support for the foot.

The equipment may include a set of shank pieces 13, each characterized differently from the others, for example, by the form of their top layer supporting surfaces, and by the thickness of the metal and its degree of resistance to downward pressure of a foot on the top layer.

In the embodiments shown by Figures 1 to 7, the top layer 14 is considerably longer than the shank piece 13, so that the ends of the top layer project from the ends of the shank piece, while in the embodiment shown by Figures 8 and 11, the top layer and shank piece are of substantially the same length.

It will now be seen that the top layer 14, the described forward connections between said layer and the fore part of the insole, and the described connections between the top layer and the shank piece, constitute an embodiment of means adapted to releasably confine the shank piece 13 in a predetermined operative position, and that said means may or may not include rear end connections, such as the members 16*a* and 17*a*. The top layer 14 and the shank piece 13 may be separably connected by the engagement of a fastener member, such as a tack 25, (Figure 3*a*) engaging an orifice 20 in the shank piece 13, the inner end of the member 25 being clinched on the under side of the shank piece. The member 25 is capable of being used only once, and may be conveniently engaged with and withdrawn from the shank piece by a shoe salesman or the shoe wearer, another member 25 being employed when another shank piece is to be connected with the top layer. I am not therefore limited to separable members 19 of the snap fastener type.

Figures 11 to 14 show a simple embodiment of the invention in which the shank piece, here designated by 130, is releasably maintained in a predetermined operative position by means including a fastening member connecting its heel, end portion with the heel end of the insole. Said fastening member may be a headed stud 26 (Figure 12), a tack 27 (Figure 13), a screw 28 (Figure 14), or one or more prongs 29 (Figure 11) integral with the heel end of the shank piece. Either of said fastening members is adapted to anchor the shank piece against endwise displacement in the shoe, and to anchor the heel end of the shank piece against edgewise displacement. The bearing of the forward end portion of the shank piece on the opposite sides of the shoe upper, or on the forward end connection of a top layer 14 with the insole, may be relied on to prevent the shank piece from swinging edgewise at its forward end portion.

It will be seen that my invention provides an arch supporter adaptable to foot arches of different heights and shapes by using differently curved and formed shank pieces, and to foot arches requiring yielding support of varying resistance to downward pressure, by providing shank pieces of different thickness and stiffness. In aggravated cases of fallen

arches a stronger support is required than in milder cases. The top layer element 14 may constitute a permanent part of the shoe and may be temporarily supported directly by the rear portion of the insole, to permit the use of the shoe without the shankpiece 13, until the need of the shank piece becomes apparent, the top layer occupying an inconsiderable space in the shoe, so that a shoe intended for use with a complete arch support embodying the invention does not have to be larger than the size required if the shank piece is not used. When the shoe is used without the shank piece, the rear portion of the insole having orifices 22 will receive the fastener member 19.

When the top layer 14 is made as a separate part as shown by Figures 1, 2 and 3, it may be supplied with the shank piece 13 as an article of manufacture to be applied to an otherwise completed shoe.

I claim:

1. An arch support for shoes comprising a permanent insole, a curved shank piece of resilient sheet metal having a remedial or corrective form and a curvature more abrupt than that of the top surface of the shank portion of the insole, and means releasably confining said shank piece in a predetermined operative position, over the shank portion of the insole so that different shank pieces may be used interchangeably in a predetermined position relative to the insole, the end portions of the shank piece bearing on portions of the top surface of the insole at opposite end portions of the shank thereof when the shank piece is confined, the curvature of the shank piece being such that its major portion is spaced above and movable toward and from the shank portion of the insole.

2. An arch support for shoes comprising a permanent insole, a curved shank piece of resilient sheet metal having a remedial or corrective form and a curvature more abrupt than that of the top surface of the insole, a flexible top or sock layer covering and supported by the shank piece, and connected at its forward end with the fore part of the insole, separable holding down connections between the rear end of the top layer and the heel end of the insole, and separable connections between the top layer and the shank piece permitting differently formed shank pieces to be applied interchangeably to the top layer when the latter is raised, said top layer and connections constituting means releasably confining the shank piece in a predetermined operative position, causing the end portions of the shank piece to bear on portions of the top surface of the insole at opposite end portions of the shank thereof, the curvature of the shank piece being such that its major portion and the top layer are spaced above and movable toward and from the shank portion of the insole.

3. An arch support as specified by claim 2, the connections between the forward end of the top layer and the insole being separable so that the top layer and shank piece are removable from and insertable in the shoe as a unit.

4. An arch support as specified by claim 2, the top layer having end portions projecting from opposite ends of the shank piece and provided with fastener members separably engageable with complemental fastener members on the insole.

In testimony whereof I have affixed my signature.

STACY M. NICKERSON.