July 5, 1927. 1,634,516

H. R. ROGERS

FOOT SUPPORT

Filed Nov. 5, 1923

Fig. 1

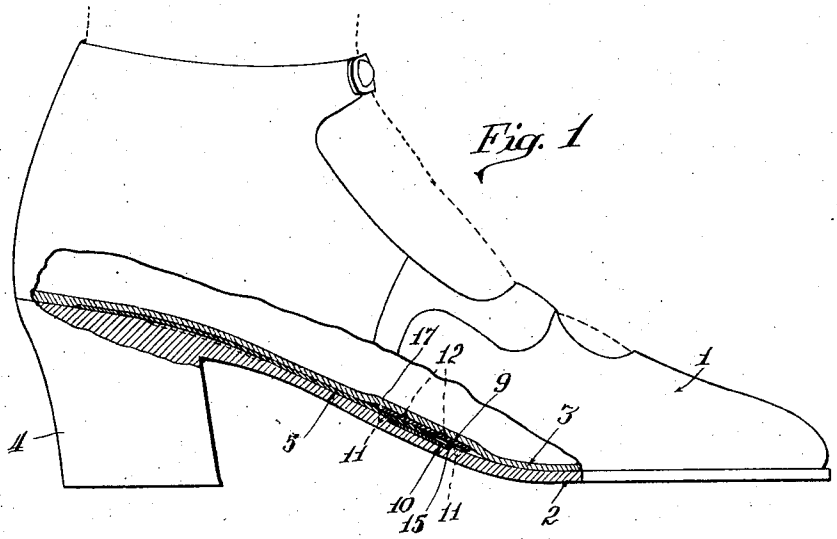


Fig. 2.

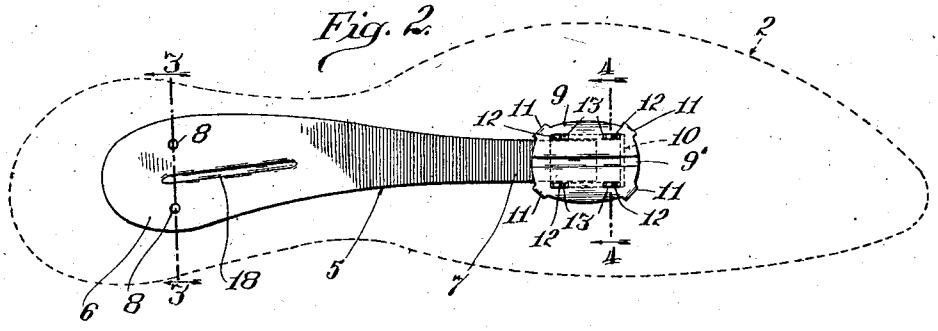


Fig. 3.

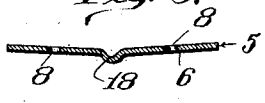


Fig. 4.

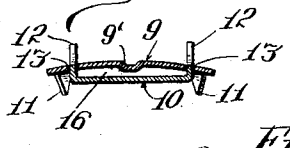


Fig. 5

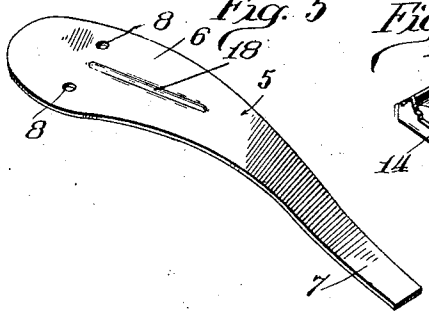


Fig. 6.

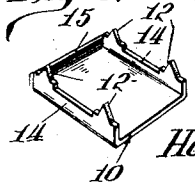
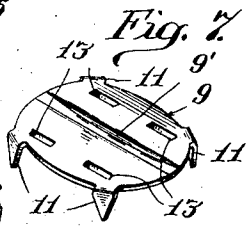


Fig. 7.



Inventor

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By Arthur W. Nelson

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Patented July 5, 1927. 1,634,516

UNITED STATES PATENT OFFICE.

HARRY R. ROGERS, OF CHICAGO, ILLINOIS.

FOOT SUPPORT.

Application filed November 5, 1923. Serial No. 672,701.

My invention relates generally to improvements in foot supports, but relates more particularly to foot supports of the type that are adapted to be embodied in the sole of a shoe.

The general object of my invention is to provide a construction which when embodied in a shoe shall greatly increase the comfort of the user when walking.

A further object of my invention is to provide a shoe construction which shall produce a result similar to that which is obtained when one walks barefooted upon mellow turf and the like.

Another object of my invention is to provide a construction which will assist in maintaining the shape of the shoe and increase its effective life.

My invention consists generally in a device of the form, arrangement, construction and co-operation of the parts whereby the above named objects, together with others that will appear hereinafter are attainable, and my invention will be more readily understood by reference to the accompanying drawings which illustrate what I consider, at the present time, to be the preferred embodiment thereof.

In said drawings:

Fig. 1 is a side elevation of the shoe embodying my invention, a portion thereof being broken away better to disclose the interior construction.

Fig. 2 is a top view of the supporting device which is assembled in the shoe, its position relative to the sole of the shoe being indicated by means of dotted lines.

Fig. 3 is a cross-section, substantially on the line 3—3 of Fig. 2.

Fig. 4 is a sectional view on the line 4—4 of Fig. 2.

Fig. 5 is a perspective view of the shank portion of the device; and

Figs. 6 and 7 are perspective views of parts in their disassembled condition, which are shown assembled in Figs. 1, 2 and 4.

Under modern conditions of life many foot troubles develop due, very largely, to the unnatural confining of the feet in shoes of a relatively rigid and unyielding nature, and also to a considerable extent because of the constant walking or standing upon cement walks, pavements and other hard surfaces. It has long been known that one can walk with comfort for great distances if the shoes are removed and if a suitable soft or mellow earth or turf is under foot. The reason for this is that the foot is so shaped that when subjected to the pressure caused by the body weight the earth forms a cushion for the arch and metatarsal bones and ligaments. In other words, the soft earth tends to crowd into the metatarsal arch of the foot, creating a pressure on the bones thereof thus serving to support it. In shoes, as heretofore devised, the sole of the shoe has been relatively flat and unyielding so that the support intended by nature has been removed and as a result, the foot frequently causes trouble.

I have produced a shoe construction which simulates to a considerable extent the conditions that obtain when walking barefooted, as before described. Referring now to the drawings for the details of construction, 1 represents a shoe upper, 2 the lower or outsole, 3 the insole, and 4 the heel. Interposed between the insole 3 and the outsole 2 is an elongated metal shank-like member 5. The member 5 is preferably composed of steel of a relatively flexible nature, such for example as twenty-two gauge steel which has been properly tempered to increase its resilience. At one end 6, it is relatively wide, tapering to a relatively narrow size at the other end 7 which is slightly twisted so that said end portion is inclined transversely to better conform to that part of the foot under which it is located. The end 6 extends over the heel portion of the shoe and is secured in place by means of nails or other fastening devices, which pass through the openings 8 provided therefor. The end 7 extends into what I term a metatarsal button which, as here shown, is composed of interfitting upper and lower parts 9 and 10, respectively. The upper part 9 is preferably cambered, as is probably best shown in Fig. 4, and it is provided with a plurality of sharp tongue portions 11 wherewith it is embedded firmly in the outsole 2. The lower member 10 is substantially rectangular in shape and has a plurality of sharp tongue-like portions 12 which extend through openings 13 provided therefor in the member 9, these tongue-portions 12 being of sufficient length firmly to imbed themselves in the insole 3. Parts 9 and 10 are thus firmly interlocked, one with the other and imbedded firmly in the shoe against displacement. The member 10, as it best shown in Fig. 6 is provided with side walls 14 and

an end wall 15 so that when the parts 9 and 10 are assembled these walls act as stops and thus provide a space 16 (see Fig. 4) for the accommodation of the end portion 7 of the shank 5.

The remaining structural characteristics will probably be best understood by a description of the construction and use of the shoe.

The process of installation of the device in a shoe in the course of manufacture is as follows: After the shoe has been completely prepared, ready to lay the outsole and while the insole is still in temper, the operator beats the insole 3 into a metatarsal gouge which has been formed in the last (not shown) on which the shoe is being produced, thus producing a button-like projection in the shoe indicated at 17 in Fig. 1. The parts 9 and 10 are now positioned at that point, the cambered surface of the member 9 being accommodated in this cup-like portion of the insole. When the part 10 has been firmly secured by its prongs projecting into the insole 3, the small end 7 of the shank 5 is placed in the receiving opening 16 with its end first abutting the end wall 15 and then withdrawn about a quarter of an inch to the position shown in Fig. 2 whereupon it is nailed in place by the fastening devices passing through the holes 8 into the heel, as before described. The shank is now firmly secured in place whereupon the outsole is affixed, the sole being properly hammered over the metatarsal button which forces the prongs 11 of the member 9 into the outsole. The member 9 has been provided with a central rib 9′ to strengthen it. I might here add that I prefer to make both the members 9 and 10 of a composition composed of steel and brass to facilitate the sliding movement of the shank portion 7 between these parts and to overcome any tendency to produce noise.

The shank, it will be observed, is provided with a rib or corrugation 18 which extends from a point rearwardly from the breast of the heel to a point forwardly therefrom, thereby providing great rigidity in the structure to that point, which is as far as it is necessary rigidly to support the human foot. From the end of the rib or corrugation 18 the shank becomes quickly smaller in size and hence quite flexible so that it yields under very slight pressure, thus sliding back and forth in the receiving slot of the metatarsal button with every action of the foot while in motion. The shank piece 5 is also curved to conform to the last and causes a gentle spring pressure against the arch of the foot which gives that much additional support. It should also be understood that the metatarsal button supports the metatarsal projection 17 against collapse and causes that desirable pressure upon the metatarsal bones and ligaments heretofore described.

The many advantageous characteristics of my shoe structure will be understood by those skilled in the art to which this appertains without further comment.

I claim:

1. A shoe embodying therein an outsole, an insole, and a foot supporting device positioned between said soles, said foot supporting device comprising an elongated metallic plate, means securing it to the heel of the shoe at one end, a metatarsal button having a convex top portion under which the opposite end of said plate is slidably mounted relative to said metatarsal button, said plate being twisted at a point between its ends, whereby said ends when considered transversely extend in different angular planes.

2. A shoe embodying therein an outsole, an insole, and a foot supporting device positioned between said soles, said foot supporting device comprising an elongated metallic plate and a metatarsal button, said metatarsal button comprising upper and lower interlocking parts some of which so engage one of said soles as to lock the button against movement in said soles.

3. A shoe embodying therein an outsole, an insole, a foot supporting device positioned between said soles and including an elongated plate and a metatarsal button, said button comprising spaced top and bottom plates each having prongs and one of said plates having openings therein through which the prongs of the other plate extends, the prongs on the top plate extending into the outsole and the prongs on the bottom plate extending into the insole, one end of said elongated plate being slidable in the space between the button plates and the other end of said elongated plate being secured in said shoe at a point above the heel.

In testimony whereof, I have hereunto set my hand this 22nd day of October, 1923.

HARRY R. ROGERS.