Sept. 22, 1942. E. B. WARD 2,296,547

FOOTWEAR

Filed June 12, 1941

Fig. 1.

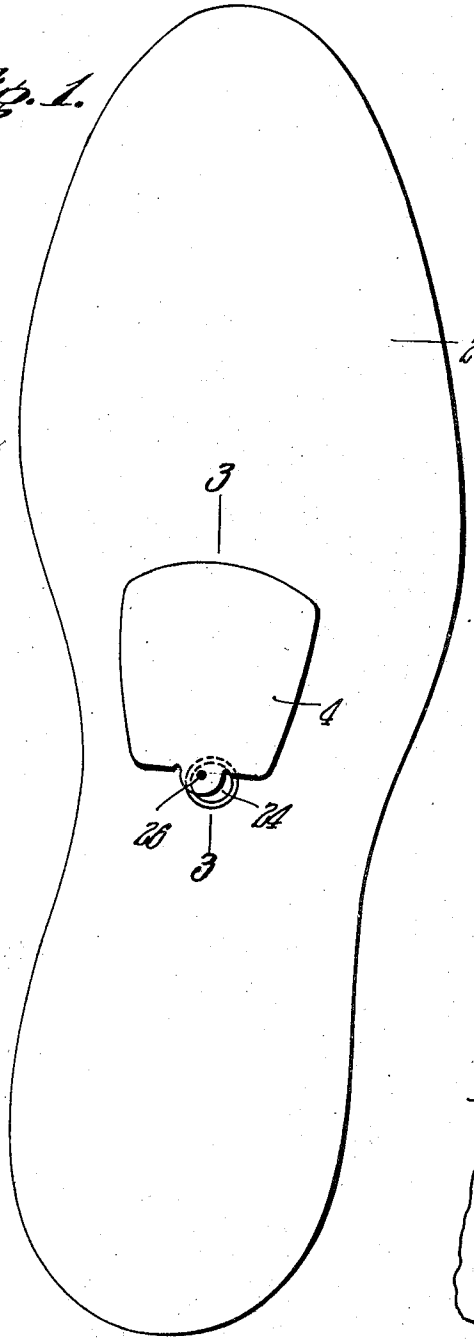



Fig. 2.

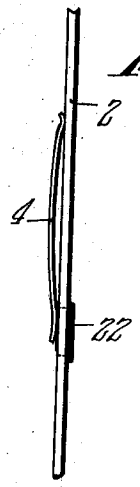



Fig. 3.

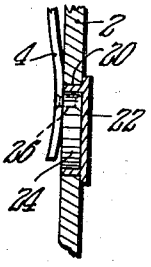
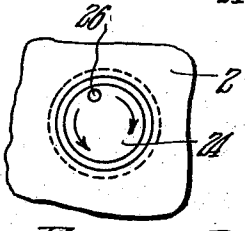



Fig. 4.




INVENTOR.

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2,296,547

# UNITED STATES PATENT OFFICE

2,296,547

## FOOTWEAR

Eugene B. Ward, West Springfield, Mass.

Application June 12, 1941, Serial No. 397,770

3 Claims. (Cl. 36—71)

This invention relates to improvements in footwear and is directed more particularly to improvements in shoe construction having a movable part or parts for supporting a certain part or parts of the foot.

It is one of the principal objects of the invention to provide a supporting device for a part or parts of the foot which device is movable by movements of the foot and shoe. The device is especially adapted to support that part of the foot commonly known as the metatarsal arch.

According to special features of the invention, there is provided a member adapted to support the foot both when the sole and heel are flat on the floor or other surface and when one is raised relative to the other so as to bend or flex the bottom part of the shoe. As will appear, the device is adjustable to various positions to accommodate different conditions and the construction may be built into the shoe or sold as a separate device for insertion thereinto.

That is to say, my device provides a simple but ingenious mechanical action whereby an arch-supporting member follows up the foot at every step in exact ratio to the height of the lift of the heel from the floor, giving a gentle but effective support to the foot both while the heel is going up and coming down. This action provides a restful treadbase for the foot and it cannot be provided with such rigid arch supports as are now in common use.

With the foregoing and various other novel features and advantages and other objects of my invention as will become more apparent as the description proceeds, the invention consists in certain novel features of construction and in the combination and arrangement of parts as will be hereinafter more particularly pointed out in the claims hereunto annexed and more fully described and referred to in connection with the accompanying drawing wherein:

Fig. 1 is a plan view of the construction of the invention;

Fig. 2 is a partial side elevational view of the same;

Fig. 3 is a sectional view on the line 3—3 of Fig. 1; and

Fig. 4 is a more or less diagrammatic view to explain certain features of construction.

It will be understood that the means of the invention may be incorporated in a shoe construction by being associated with the sole thereof or may be inserted in a shoe as a separate and removable device. That is to say, the arch-supporting means is so constructed that it may as well be built into the shoe as be associated therewith as more or less of an appliance apart and removable from the shoe.

What I refer to as a support or body member is indicated by 2 and it is to be understood that this may be either built into a shoe during its manufacture or placed therein as a more or less of an appliance. In any event, the said member will usually consist of a relatively flat and thin strip or piece of leather or similar material having the flexibility and composition which is desirable in a shoe-surfacing or lining material.

As has been suggested and as will be described, while the construction of the invention preferably includes a support or body such as the member 2, the form of such member may obviously vary to not only accommodate shoes or footwear as to size and shape but to permit its incorporation or association with the same in various ways.

The construction of the invention may, in other words, be relatively permanently associated with a shoe during its manufacture as between the inner and outer soles thereof or it may take the form of a separate and removable device adapted to be inserted into a shoe after its manufacture, preferably adjacent the inner side of the outer sole, in which case an inner covering of some soft and flexible material is usually placed thereover.

There is a plate member 4 movable relative to the support member and so formed as to be capable of flexing relative to the metatarsal arch of the foot as the foot and shoe are flexed or bent relative to one another. That is to say, when the construction of the invention is in proper position with respect to the shoe and foot and the latter are flexed or bent, as in walking, the plate member is caused to more or less follow the contour of the foot's lower surface and support the particular portion thereof above referred to at all times.

It has been found desirable that the plate member mentioned be so associated with its support that the parts are capable of a hinge-like action and the support is somewhat pliable, as stated, for obvious reasons.

The preferred manner of providing this hinged or pivoted arrangement is to form a socket or aperture 20 in the support 2 in which there is received a receptacle-like member 22. It is desired that the socket 20 be circular in shape and that the member 22 include a cup-like part of a corresponding shape, although obviously of slightly less diameter, and that the construction

of the member 22 be such that its cup-like part has a peripheral flange for disposition against one surface of the flexible member 2.

It is to be understood that the hinged or pivoted plate member 4 may be disposed adjacent either the lower or upper surface of the sole part 2. To this end, I provide that the cup-like part of the receptacle-forming or receiving member may extend upwardly into the hole in the support or downwardly thereinto.

The plate 4 is provided with what I call a retaining member 24 which is preferably disc-like in form and of corresponding shape, but, of course, of slightly less diameter than the cup of member 22 and of the hole 20. This is pivoted to the part 4 as by means of a connecting and rotatable pin 26 substantially as shown, and said disc is removably received in the cup of the receiving member and freely rotatable therein.

The construction is such that the pivot point of the disc is eccentrically arranged as shown so that the plate may be swung into various sidewise and forward and backward positions relative to the support.

It will be appreciated that the retaining member may be rotated in either direction in its receiving cup, as indicated by the arrows in Fig. 4. Also, there may be prong-like projections extending from spaced points on the plate member in the direction of the flexible support.

These are for impinging or extending into the support material once the supporting plate has been swung in the manner described to the position found most desirable for flexing against the foot. It will be clear that such securing or fixing means may vary in form to a considerable degree.

Manifestly the specific details of construction may be considerably varied from those herein shown and described without involving any departure from the principle of the invention or sacrificing any of the advantages inherent therein. While I have described my invention in this specification in great detail and particularly with respect to the present preferred form thereof, it is not desired to be limited thereto since many changes and modifications may be made therein without departing from the spirit and scope of the invention.

The invention may be embodied in other specific forms without departing from the essential characteristics thereof. Hence, the present embodiments are therefore to be considered in all respects merely as being illustrative and not as being restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all modifications and variations as fall within the meaning and purview and range of equivalency of the appended claims are therefore intended to be embraced therein.

What it is desired to claim and secure by Letters Patent of the United States is:

1. As a new article of manufacture, a device for supporting the metatarsal arch region of the foot comprising in combination, a flexible support member, a receptacle member associated with said flexible member having an open side at one side of the member, a retaining member rotatable in said receptacle, a plate member at said one side of the flexible member, and pivotal connecting means associated with said plate member and retaining member.

2. As a new article of manufacture, a device for supporting the metatarsal arch region of the foot comprising in combination, a flexible support member, a receptacle member associated with said flexible member having an open side at one side of the member, a retaining member rotatable in said receptacle, a plate member at said one side of the flexible member, and pivotal connections between one end of said plate member and retaining member having an axis disposed substantially parallel to and at a side of the axis of rotation of said retaining member and the opposite end of the plate member adapted to bear on said support member.

3. As a new article of manufacture, a device for supporting the metatarsal arch region of the foot comprising in combination, a flexible support member, a receptacle member associated with said flexible member having an open side at one side of the member, a retaining member rotatable in said receptacle, a flexible plate member having one end disposed on said retaining member with a part extending away therefrom for resting on said support member, and pivotal connections between said one end of the plate member and said retaining member disposed in parallelism with the axis of the latter and at a side thereof.

EUGENE B. WARD.