This invention relates to footwear for people whose activities or occupations keep them upon their feet for lengthy periods of time or for people who are in physical need of support for the arches of their feet.

It has been found that people who are active on their feet, such as athletes, clerks, nurses, etc., frequently complain of being unduly tired, particularly in the feet, although apparently the feet of such people are sound. Long periods of standing or walking place an unnatural strain upon the muscles and ligaments associated with the metatarsal bones and frequently produce a condition commonly called broken arches, flat feet, etc. This condition is most distressing, and while effort has been made to properly support the arch of the foot by various expedients, such as metal arches, and has resulted in varying degrees of success, nevertheless regardless of the degree of relief afforded, such devices are usually, if built into the shoe, stiff and inflexible and not resilient, while if they are detachable, that fact alone makes for uncomfortableness for it is always shifting around, or may be displaced when the shoes are taken off, thereby adding to the general inconvenience of the user.

Therefore it is a prime object of the present invention to provide a cushioned yet flexible arch support in combination with the sole of footwear.

Advantages of the invention are:

1. Complete support for the arch of the feet regardless of the nature of the activity of the user, thereby promoting comfort and ease and the elimination of that distressful condition commonly known as fallen arches.

2. Shoe sole flexibility that eliminates all drag due to stiffness of the shoe sole, thereby adding to the pleasure, ease and comfort of walking.

3. Monolithic construction, thereby making possible cheaper, more uniform, more resilient, more comfortable and more desirable footwear than has heretofore been possible.

Referring to the drawing of which there is one sheet:

Figure 1 is a side view of the device of this invention showing the flexure points in elevation.

Figure 2 is a top view of the inner surface of the shoe sole showing the flexure slots.

Figure 3 is a view showing the flexure slots on the outer or bottom side of the sole.

Figure 4 is a utility view showing the device of this invention as applied to footwear.

Figure 5 is a transverse sectional elevation taken on line 5—5, Figure 1.

Figure 6 is a transverse sectional elevation taken on line 6—6, Figure 1.

The reference character 10 indicates a conventional type of shoe or other footwear. The shoe 10 may be made of leather or fabric either in whole or in part, and is built upon or in conformity with standard lasts, and is provided with a sole 12 constructed in conformity with the theory employed in the present invention.

The device of the present invention comprises a shoe sole 12 having a plurality of slots 14 which are shown in the drawing as being parallel and extending at right angles from a medial center line 16 extending from approximately a point central with the second greatest toe to a point central of the heel.

It will be apparent that the slots 14 may extend inwardly toward the medial center line 16 in directions at right angles to the configuration of the inner outline 18 of the sole 12.

Slots 20 complementary to slots 14 are formed on the reverse side of the sole and as shown in Figures 1 and 4 are formed by vertically extending ribs 22, spanning or crown pieces 24 and base links 26.

As will be apparent from the drawing the slots 14 and 20 have their greatest depth in the central area of the slotted section, while the slots on the sides of such greatest depth slot, have diminishing depths. The result of this construction is twofold: first, it provides a contour which conforms to the arch of the normal foot; secondly, it permits extreme flexibility in the sole of the shoe.

The crown pieces 24 support the arch of the foot in complete harmony with the duty imposed on the foot, yet the ribs 22, crown 24 and base 26 are yielding resilient, thereby eliminating jar-ring and stiffness when the user is walking, etc.

The crowned slots 20 as shown in Figure 5, are tapered from the point of greatest depth, as indicated by the reference character 28 to a point of vanishment at 30. This construction permits conformity with the shape of the arch of the foot in a transverse section, while the previously mentioned variable depth of the slots 14 and 20 permits conformity to the longitudinal section of the arch of the foot.

An inner sole, not shown in the drawing, but common and in fact used in practically all shoes, is laid over the slots 14, thereby preventing foot discomfort and irritation.

It is anticipated that the device of this invention, i.e., the shoe sole, will be made of rubber or a composition of rubber and fabric, or such flex-
ible and moisture proof composition as may be readily moulded and treated as by vulcanizing to effect a maximum degree of uniformity of construction, resiliency and flexibility.

While I have described the preferred form of my invention, I do not wish to be limited to the specific disclosure herein made, but do claim as my invention, all such colorable variations of construction and method as clearly falls within the scope and spirit of the present invention herein disclosed.

I claim:

1. A sole for footwear, said sole comprising a sole member, having slots, certain of said slots being formed in the upper surface of said member, and certain others of said slots being formed in the under surface of said member, said slots being tapered, and a continuous rib forming a common marginal limitation for said slots.

2. A sole for footwear, said sole comprising a sole member, having slots, certain of said slots being formed in the upper surface of said member, and certain others of said slots being formed in the under surface of said member, said slots being tapered through their greatest dimension and being of a maximum and a minimum depth transversely of their collective minimum dimension.

3. An outer sole member of resilient material for footwear in which that portion of the member below the arch of the foot is of sufficient vertical thickness to materially support the arch of the foot directly from the ground and is provided with a first set of open recesses extending downwardly from the upper surface partly through said member and a second set of open recesses extending upwardly from the lower surface partly through said member, the recesses of said first and second sets respectively being alternately disposed with respect to each other in a horizontal plane and overlapping each other vertically, whereby the material between adjacent recesses of said first and second sets respectively is in the form of a plurality of substantially vertical wall members integral at their upper edges with the upper surface material intermediate said first recesses and integral at their lower edges with the lower surface material intermediate said second recesses.

4. An outer sole member of resilient material for footwear comprising a single piece of material extending substantially the full length of the footwear, that portion of the member below the arch of the foot being graduated in thickness laterally and longitudinally to conform to the curvature of the arch of the foot and having a first set of open recesses extending downwardly from the upper surface partly through said member, and a second set of open recesses extending upwardly from the lower surface partly through said member, said recesses of said first and second sets being alternately disposed with respect to each other in a horizontal plane and overlapping vertically, whereby the material between adjacent recesses of said first and second sets respectively is in the form of a plurality of substantially vertical wall members integral at their upper edges with the upper surface material intermediate said first recesses and integral at their lower edges with the lower surface material intermediate said second recesses, said recesses being of varying depth corresponding to the varying total thickness of the member under different portions of the arch of the foot whereby the bottom walls of the first recesses and the top walls of the second recesses are of substantially uniform thickness throughout.

5. A sole as described in claim 4, in which the lower surface of the entire sole is substantially flat, said sole being of varying increased thickness under the arch and heel whereby the upper surface conforms to the under surface of the human foot.

6. A sole as described in claim 3, in which adjacent recesses of said first and second sets are of similar configuration such that each vertical wall member between adjacent recesses is of substantially uniform horizontal thickness.