Aug. 14, 1923. 1,464,994

N. V. LEVITT

FOOT ARCH SUPPORT

Filed Oct. 29, 1919

Fig. 1.

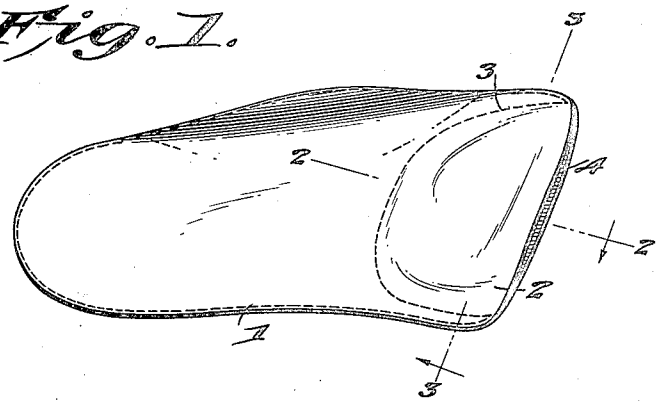

Fig. 2.

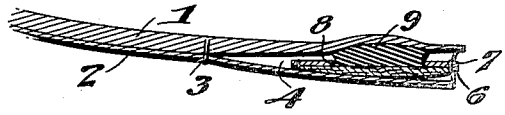

Fig. 3.

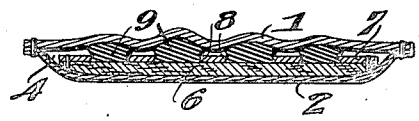

Fig. 4.

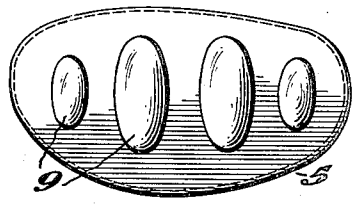

Fig. 6.

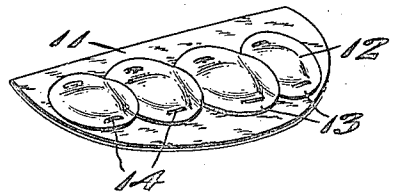

Fig. 7.

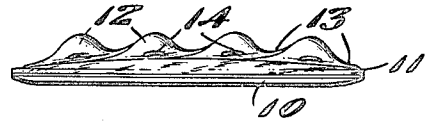

Fig. 5.

Inventor

Nathan V. Levitt

By

Attorney

Patented Aug. 14, 1923. 1,464,994

UNITED STATES PATENT OFFICE.

NATHAN V. LEVITT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO MORRIS L. GOLDICH, OF PHILADELPHIA, PENNSYLVANIA.

FOOT-ARCH SUPPORT.

Application filed October 29, 1919. Serial No. 334,185.

To all whom it may concern:

Be it known that I, NATHAN V. LEVITT, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia, State of Pennsylvania, have invented new and useful Improvements in Foot-Arch Supports, of which the following is a specification.

My present invention relates to an improved foot arch support.

The primary object of this invention is to provide a support which is constructed so as to space and spread the joints in the anterior metatarsal arch to relieve the pains or cramps due to improper spacing and to relieve metatarsalgia.

A further object is to provide a support which while properly spacing the bones of the anterior metatarsal arch will slightly raise these bones and will act to equalize the body's weight and to relieve the pressure on the ligaments and digital nerves.

A still further object of the invention is to provide an arch support having a pocket constructed in that portion adapted to receive the anterior metatarsal arch, which pocket will receive and removably hold cushions of different thicknesses, thus allowing for adjustment of the height to which the bones in this portion of the foot are raised.

Another object resides in providing a pad structure to be received in said pocket, which pad structure has a plurality of smaller cushions thereon to fit between and properly space and spread the metatarsal bones, and in providing a plurality of these cushions of different thickness to be interchangeably fitted upon the pad and to thus permit adjustment and fitting of the arch support structure to the requirements of each individual foot.

With these and other objects in view, this invention embodies the various novel features of construction, and combinations and arrangement of parts, which will now be more particularly set forth in connection with the drawings, and then pointed out in the claims.

In the drawings:

Figure 1 is a view in bottom plan of my improved form of foot arch support.

Fig. 2 is an enlarged fragmentary sectional view on line 2—2 of Fig. 1.

Fig. 3 is a transverse sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a plan view showing one form of pad which can be employed.

Fig. 5 is a view in perspective illustrating one of the interchangeable cushion members for use with this pad structure.

Fig. 6 is a view in perspective of a modified form of pad.

Fig. 7 is an edge view of the disclosure in Fig. 6.

The main portion 1 of the arch support can be made up in any approved form and of any desired materials, and can be stiffened if the requirements of use demand. A covering 2, of leather or other material on the lower side of the body portion is left loose at its forward edge and is preferably stitched around or secured on the line indicated at 3, to form a pocket 4 at the forward end of the body portion. Or, this pocket might be formed from a separate piece of material stitched on to the body portion.

The extent of the body portion forming one side of the pocket is preferably tapered off as shown in Fig. 2 or otherwise formed to be more or less flexible and yielding, and the pad structure 5 is shaped to be received within the pocket. This pad includes a resilient cushioning member 6, of sponge rubber or other suitable material, which has a body member 7 secured thereon, and the body member has a plurality of openings 8 therein. Interchangeable cushion inserts 9, of rubber or other material having resilient qualities, are constructed substantially as shown in Fig. 5 to present convex or ball-shaped faces on one side, and are made flat on the remaining side, these inserts being grooved around their peripheries. The cushion inserts are adapted to be removably fitted to the openings 8, and the body is preferably bevelled inwardly around the openings to present a substantially dove-tailed shape which will catch within the peripheral grooves of the cushion inserts 9 and retain the same against casual displacement. These cushion inserts are made of various thicknesses and of greater and lesser convexity,

and as shown in Fig. 4, the openings 8 may be of different sizes in which case the size of the inserts will be varied.

In the use of the arch support constructed after the manner of my invention the resilient forward edge of the body portion will extend forwardly to bear against the plantar surface of the anterior metatarsal arch and a pad placed within the pocket 4 will be disposed to raise and support this portion of the foot. By placing a pad structure, made up in the manner described, in the pocket 4 with the cushion inserts 9 upwardly, a resilient filler is provided to raise the forward end of the arch support and at the same time the convexities of the inserts 9 are presented beneath the thin forward end of the body portion. As the weight of the foot is brought to bear upon the arch support, when the same is placed within the shoe, the flexible edge of the support body gives under the pressure and a surface of substantially the form shown in Fig. 3 is presented beneath the anterior metatarsal arch. The convexities formed by the cushion inserts 9 fit in between the joints or metatarsal bones, and through a proper articulation pain or cramps due to improper spacing are relieved.

For a normal foot four of the cushion inserts will be used, and the spacing of the openings 8 can be somewhat standardized, however for different conditions and to insure a comfortable fitting the pads can be made up with the openings in different spacings. A plurality of cushion inserts of greater and lesser convexity will preferably be provided so that in each fitting the cushions can be inserted to extend to a proper height to bring about articulation of the bones as in a normal foot.

While the pad structure hereinbefore particularly described will function efficiently, other forms might be employed, and in Figs. 6 and 7 I have illustrated one embodiment which might be resorted to. In this adaptation the stiffening member 10 has a sponge rubber or other cushion member 11 thereon and a plurality of convex cushions 12 are secured on this cushion rubber 11. The cushions 12 are preferably thinned out at their edges as at 13 and are preferably overlapped when fitted in place to thus present an even undulation irrespective of positions to which the pad structure may be flexed by shifting of the weight within the shoe. The cushion members 12 are secured in place by means of stitching at 14, or in any other desired manner.

From the foregoing it will be seen that I have provided a foot arch support which presents portions especially designed to raise the bones of the anterior metatarsal arch and to articulate the same in natural spacing, thus equalizing the distribution of weight on the foot to secure the proper bearing points necessary to a normal functioning and to a full relief of unnatural and undue pressure on the associated ligaments and the digital nerves.

While I have described the principle involved in my invention, together with what I consider the best form of the structure, and have mentioned only certain possible modifications, I wish to have it understood that other changes in construction and arrangement of the parts may be made when desired as are within the scope of the invention as defined in the appended claims.

I claim:

1. A foot arch support including, with a body portion having one end made flexible and extended to receive the anterior metatarsal arch of a foot, cushion means disposed beneath the flexible portion of the body formed to present a plurality of convex protuberances on the upper side beneath the flexible portion to conform the body portion to present the protuberances to fit between and articulate the bones of the anterior metatarsal arch.

2. A foot arch support including with a body portion extended to receive the anterior metatarsal arch, said body being made flexible in the extended portion and provided with a pocket, cushion means received within said pocket provided with a plurality of convex protuberances spaced to be received between and to articulate the bones of the anterior metatarsal arch.

3. A foot arch support including with a body portion extended to receive the anterior metatarsal arch, said body portion being made flexible in the extended portion and provided with a pocket, a pad adapted to be removably fitted within said pocket and provided with convex cushion portions on its upper side to present their raised form through the flexible portion of the body in spaced relation and to fit between the bones of the anterior metatarsal arch to articulate the same in a natural spacing.

4. A foot arch support including with a body portion extended to come beneath the anterior metatarsal arch and provided with a pocket, a pad adapted to be removably fitted within said pocket, and convex cushion members removably fitted in conjunction with said pad structure and spaced thereon to come between the bones of the anterior metatarsal arch when the body's weight is supported by a foot resting on the arch support having the pad structure in place.

5. A foot arch support including with a body portion extended to come beneath the anterior metatarsal arch of a foot, an elongated pad to be fitted transversely in conjunction with the extended portion and provided with a plurality of openings spaced throughout its length, and convex cushion

inserts of different heights constructed to be fitted to and held within the openings of said pad.

6. A foot arch support including with a body member extended to come beneath the anterior metatarsal arch of a foot, said body member being flexible in the extended portion and provided with a pocket beneath the flexible portion, an elongated pad to be fitted transversely in said pocket and provided with a plurality of openings spaced throughout its length, and convex cushion inserts of different heights constructed to be fitted to and held within the openings of said pad.

In testimony whereof, I affix my signature.

NATHAN V. LEVITT.