FOOT EXERCISER SANDALS

Ernst Bittner, Frankfurt am Main, and Werner Grass, Frankfurt an Unterad, Germany, assignors to The Scholl Mfg. Co., Inc., Chicago, Ill., a corporation of New York

Filed Oct. 14, 1959, Ser. No. 846,303
Claims priority, application Germany Nov. 26, 1958
1 Claim. (Cl. 128—615)

This invention relates to improvements in foot exerciser sandals, and more particularly to sandals designed to stimulate and exercise the foot while the user is walking naturally although the invention may have other uses and purposes as will be apparent to one skilled in the art.

Another aspect of the invention relates to a type of sandal designed to automatically exercise the foot when the sandal is worn, and particularly when the user is walking in a natural manner. The use of the sandal results in restoring or improving the toe gripping action of the foot, a function frequently lost wholly or partially as a result of wearing shoes that constrict natural foot motion and toe freedom. As a result of wearing the sandal, the entire structure of the foot is strengthened, and arch sag and stiffened joints are relieved and corrected by re-activation and revitalization of weakened muscles in the feet and strained ligaments. Circulation of the blood is stimulated and increased through the foot eliminating a condition of constant cold feet due to decreased circulation of the blood in the lower extremities, calluses on the ball of the foot gradually disappear as a weakened metatarsal arch becomes stronger and the normal strength, suppleness, and elasticity of the foot is restored.

Exercising sandals of the type of the instant invention are provided with a generally transverse bulge or elevation in the forward portion thereof which is successively gripped and released by the toes during walking. In prior constructions, this transverse elevation extended across the entire width of the sole block of the sandal, and such construction automatically gave the great toe of the foot a wrong position anatomically which frequently aided the formation of crooked toes or aggravated a condition of hallux valgus rather than alleviating or preventing such disorder. Prior known forms of exerciser sandals were also objectionable in that they were not desirable comfortable, not as durable as wanted, were frequently objectionably heavy, and did not provide proper toe spreading when needed.

In view of the foregoing, it is an important object of the instant invention to provide an exerciser sandal so contoured as to automatically cause an anatomically correct positioning of the toes when the sandal is put on.

Another feature of the instant invention is the provision of an exerciser sandal having a sole block contoured in keeping with the planar surface of a foot and provided with a generally transverse elevation in the forward portion to be gripped by the toes of a user, which elevation does not extend beneath the great toe.

Another object of the instant invention is the provision of a foot exerciser sandal having a contoured sole block with a transverse elevation in the forward portion thereof to be gripped by the toes of a user, the elevation terminating short of the great toe, and the block having a depression therein to receive the metatarsal head of the great toe, thus causing an automatic separation of the toes, preventing the formation of crooked toes, and alleviating or countering conditions such as hallux valgus.

A further object of this invention is the provision of a foot exerciser sandal especially constructed for lightness in weight while giving rigid support to the foot.

Still another object of this invention is the provision of a durable and economical foot exercising sandal equipped with toe spreading means.

While some of the more salient features, characteristics and advantages of the instant invention have been above pointed out, others will become apparent from the following disclosures, taken in conjunction with the accompanying drawings, in which—

FIGURE 1 is a fragmentary perspective view of a foot exerciser sandal embodying principles of the instant invention, showing the same in operative position upon the foot of a user;

FIGURE 2 is a plan sectional view of the sandal taken just above the sole block, illustrating the sole block in plan;

FIGURE 3 is a fragmentary vertical sectional view taken substantially as indicated by the line III—III of FIGURE 2, looking in the direction of the arrows;

FIGURE 4 is also a fragmentary vertical sectional view taken substantially as indicated by the line IV—IV of FIGURE 2;

FIGURE 5 is a fragmentary vertical sectional view taken substantially as indicated by the staggered section line V—V of FIGURE 2;

FIGURE 6 is an enlarged transverse vertical sectional view taken substantially as indicated by the line VI—VI of FIGURE 2;

FIGURE 7 is a bottom plan view of a foot exerciser sandal embodying principles of the instant invention, but of a somewhat different construction, showing the attachment means in section and with the outersole eliminated;

FIGURE 8 is a fragmentary vertical sectional view taken substantially as indicated by the line VIII—VIII of FIGURE 7, with the device in upright position;

FIGURE 9 is a fragmentary plan sectional view illustrating the device equipped with a toe spreader on the sole block;

FIGURE 10 is a fragmentary side elevational view of the structure of FIGURE 9;

FIGURE 11 is a fragmentary plan view of our improved sandal, showing the attachment means equipped with a toe spreader; and

FIGURE 12 is a fragmentary side elevation of the structure of FIGURE 11.

As shown on the drawings:

In the first illustrated embodiment of the instant invention, seen in FIGURES 1 to 6 inclusive of the drawings, there is shown a foot exerciser sandal comprising a sole block 1 on the underside of which is attached an outersole 2 of any desirable material, and which can satisfactorily be of non-slip porous crepe. The sole block 1 is relatively thick in comparison with the outersole 2 and may be made of any suitable material, molded from a thermoplastic or thermostetting plastic, or made of other materials, being highly satisfactory to utilize a single piece of hardwood with a contoured upper surface for this purpose. The bounding shape of the sole block and outersole is generally that of a human foot, structure for a right foot being illustrated in the drawings. It will be
understood, of course, that an allochiral structure would be used for the left foot.

As indicated at 3 in FIGURE 1, the naked foot of the user rests directly upon the upper surface of the sole block 1. The upper surface of the block 1 is contoured in keeping with the plantar surface of a foot and includes a depression at 4 to provide a cupped heel seat, an intermediate elevation indicated at 5 to underlie the longitudinal arch of the foot, a depression at 6 for the metatarsal head of the great toe, and a generally transverse elevation 7 in the forepart of the block which is gripped by the toes of the user during walking.

The metatarsal crest or elevation 7 extends inwardly from the outer edge of the sole block 1 and terminates short of the great toe of the foot. This elevation is located just anteriorly of the metatarsal arch of the foot, so the toes extend over the elevation while the metatarsal heads contact the sole block at the rear side of the elevation. As in FIGURE 3, the elevation 7 is of relatively low height underneath the small toe of the foot, then increases in thickness as seen in FIGURE 4 until it reaches a relatively great height under the second and third toes of the foot, and then drops off abruptly toward the great toe depression 6, leaving the great toe resting in the depression and entirely off the elevation 7. Consequently, when the weight of the body rests upon the surface of the sole block 1, the great toe is urged away from the other toes into anatomically correct position. Thus, the formation of crooked toes is prevented or discharged by the sandal, and a condition of hallux valgus existing theretofore is alleviated or possibly corrected.

Attachment means for holding the sandal on the foot of a user are provided in the form of strap members 8 and 9 which may be adjustably connected over the top of the foot by a buckle 10. As seen best in FIGURE 6, each of the strap members 8 and 9 preferably comprise outer and inner cover members 11 and 12, which may desirably be of soft leather or the equivalent, and an inner layer 13 of cushioning material which may be of any suitable soft material such as padding, polyurethane or polyvinyl foam, foam latex, etc. As also seen in FIGURE 6, the strap members are secured to opposed side edges of the block 1, and for this purpose it is quite satisfactory to utilize a plurality of screws 14 driven into the block through the strap, and it is preferable to utilize a washer 15 inside the head of each screw to avoid the possibility of the screw tearing the strap. It is a simple expedient to buckle the strap members over the metatarsal arch region of the foot to provide a snug embracing relationship with the foot. Preferably, no other means are utilized to attach the sandal to the foot; the heel of the foot being free to raise and lower relatively to the sole block 1.

In the use of the sandal described, no special talents of the wearer are necessary. The sandal is put on the foot and the strap members are adjusted to snugly embrace the foot. The sandals are worn preferably with the feet naked, since obscurity interferes with the proper flexing and spreading of the toes. When the foot is at rest it is positioned squarely upon the upper contoured surface of the sole block 1, as seen in FIGURE 1. As a step is taken, the toes of the foot contract and grip the elevation 7, while the heel raises a short distance off the sole block. As the foot is elevated off the floor, the gripping of the elevation 7 by the toes tends to raise the rear portion of the sandal into contact with the foot, and while the foot is swinging forward just in advance of again contacting the floor at the completion of a step, the toes are preferably elevated or stretched upwardly, and as the foot again comes to rest on the floor, the toes assume their original position over the elevation 7.

The constant flexing of the toes in alternately gripping and releasing the elevation 7 stimulates and strengthens the entire foot and some of the leg muscles, definitely in-
material contoured in keeping with the plantar surface of a human foot and having a depression formed therein for receiving the great toe, a transverse elevation on said block positioned to underlie the outer four toes of a foot, said elevation terminating inwardly and abruptly adjacent the location of the great toe, strap means secured to said block in position to embrace the foot of a user in the region of the metatarsal arch, said strap means being the only means for retaining the sandal on the foot of a user, whereby gripping of said elevation by the outer four toes maintains the heel portion of the block adjacent the heel of the foot during walking.

References Cited in the file of this patent

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Inventor(s)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,080,305</td>
<td>Scholl</td>
<td>Dec. 2, 1913</td>
</tr>
<tr>
<td>1,730,466</td>
<td>Mallott</td>
<td>Oct. 8, 1929</td>
</tr>
<tr>
<td>1,867,679</td>
<td>Riehle</td>
<td>July 19, 1932</td>
</tr>
<tr>
<td>2,096,500</td>
<td>McCahan et al.</td>
<td>Oct. 19, 1937</td>
</tr>
<tr>
<td>2,167,035</td>
<td>Westheimer</td>
<td>July 25, 1939</td>
</tr>
<tr>
<td>2,217,990</td>
<td>Nussbaum</td>
<td>Oct. 15, 1940</td>
</tr>
<tr>
<td>2,518,649</td>
<td>Tydings et al.</td>
<td>Aug. 15, 1950</td>
</tr>
<tr>
<td>2,539,557</td>
<td>Stroup</td>
<td>Jan. 30, 1951</td>
</tr>
<tr>
<td>2,808,662</td>
<td>Webb</td>
<td>Oct. 8, 1957</td>
</tr>
</tbody>
</table>