ORTHOPEDIC SHOE CONSTRUCTION

Theodore J. Meiller, Bryan, Tex., assignor to Meiller Research, Inc., Drawer CB, College Station, Tex., a corporation of Texas

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3 Claims

ABSTRACT OF THE DISCLOSURE

An orthopedic shoe construction having an orthopedic shoe element to correct "toe-in" or "toe-out." The shoe element, either a heel or sole, or both, is provided with a plurality of resilient, parallel, spaced ribs, arranged at an acute angle with respect to the longitudinal axis of the element and contoured towards one end of that axis. Upon ground engagement of the ribs under the weight of the shoe wearer, the element and shoe will shift laterally to correct "toe-in" or "toe-out," depending upon the direction the ribs are slanted. If the ribs are terminated in spaced relation from an edge of the element, ankle roll is also controlled.

This invention relates to an orthopedic shoe construction, and more specifically, an orthopedic shoe construction having an orthopedic shoe element for correcting various types of foot deformities.

The present invention has as an object the provision of an orthopedic shoe element of simple construction, which is specifically designed to correct such abnormal foot conditions as "toe-in," "toe-out," eversion (ankle roll outwards), inversion (ankle roll inwards), or a combination of any of these conditions.

It is a further object of this invention to provide an orthopedic shoe element of the construction indicated which can take the form of either a shoe heel, shoe sole, or combination of a heel and sole, and thus be easily secured to a standard shoe or shoe upper.

Abnormal foot deformities of the type mentioned are generally corrected in infancy and childhood by having the child wear a special shoe provided with either a sole or heel built up with a leather wedge placed in a desired location and/or by foot clamps fastened to the shoe so as to turn the foot of the child. The shoes are worn by the child during sleeping hours, and due to the turning action provided over an extended period of time, the young bones tend to return to a normal, straightened position.

This invention provides a more effective and gentle straightening device, by utilizing a corrective walking shoe sole and/or heel to bring about a change in the mechanics of the foot.

Further objects and advantages of the invention will become apparent from the following description and claims, and accompanying drawings, wherein:

FIGURE 1 is an exploded perspective view of the orthopedic shoe construction of the present invention;

FIGURE 2 is a bottom plan view of a pair of orthopedic shoes of the present invention used to correct "toe-out" deformities;

FIGURE 3 is a bottom plan view of a pair of orthopedic shoes of the present invention used to correct "toe-in" deformities;

FIGURE 4 is an end view in elevation of a pair of orthopedic shoes of the present invention having a pair of inversion (ankle roll inwards) correcting heels;

FIGURE 5 is an end view in elevation of a pair of orthopedic shoes of the present invention having a pair of eversion (ankle roll outwards) correcting heels;

FIGURE 6 is a bottom plan view of a pair of orthopedic shoes of the present invention supplied with both inversion heels and soles;

FIGURE 7 is a bottom plan view of a pair of orthopedic shoes of the present invention supplied with both eversion heels and soles;

FIGURE 8 is a cross-sectional view taken substantially along the plane indicated by the line 8—8 of FIGURE 1;

FIGURE 9 is a view similar to FIGURE 8, but illustrating the manner in which the orthopedic shoe construction of the present invention corrects one of the foot abnormalities discussed above.

Referring now to the drawing in detail, wherein like numerals indicate like parts throughout the several views, FIGURE 1 illustrates an orthopedic shoe construction generally designated by the numeral 20.

The shoe construction 10 includes a standard shoe 12 having an ordinary heel and sole. The shoe construction 10 could include a shoe upper in lieu of the standard shoe 12.

The upper could then be provided with an orthopedic sole or heel in accordance with the instant invention, as will be made clear hereinafter. Wherever the word shoe appears throughout the following specification and claims, it should be understood to mean a shoe with or without a heel and sole.

The shoe construction is provided with an orthopedic sole 14 and/or heel 16. Since in most shoes, the heel portion is the first to make ground contact, the orthopedic shoes described hereinafter are preferably provided with orthopedic heels alone and ordinary soles. However, to insure proper action, both heel and sole could be of orthopedic construction, and the invention is so illustrated.

FIGURES 1 and 2 illustrate an orthopedic heel and sole which are specifically adapted to correct "toe-out" foot deformities. As shown in full lines in FIGURE 2, the foot of the shoe wearer are normally divergent. It is desired to correct this abnormality by causing the feet to assume the positions shown in phantom lines in FIGURE 2.

In order to accomplish this result, the "toe-in" sole 14 and heel 16 for correcting "toe-out," include a first side 18 and a second opposed side 20. The first side 18 of the sole 14 and heel 16 is substantially flat for flush securement to the sole 26 and heel 28 of the standard shoe 12.

The opposed side 20 of the sole 14 and heel 16 is provided with a series of resilient, substantially parallel ribs 22, spaced by valleys 24. The orthopedic heels and soles are of one-piece construction and are made of resilient material such as rubber, plastic, etc.

The ribs 22 are arranged to extend at an acute angle with respect to the longitudinal axis of the sole 14, heel 16, and shoe 12. This angle is approximately 38 degrees but is subject to variation in accordance with the degree of correction necessary. As shown in FIGURE 8, the ribs 22 are also inclined or canted towards the rear end of the heel, sole, and shoe. The spacing between any two of the ribs 22 is greater than the height of any one of said ribs so that when the weight of the shoe wearer is applied to the heel and/or sole element, the canted and slanted ribs 22 will fold into adjacent valleys 24 (as shown in FIGURE 9) causing the heel and/or sole, as well as the shoe, to shift laterally and forwardly about the ground engaging points A of said ribs. This causes the longitudinal axis of the heel, sole, and shoe to undergo an angular shift, or turn, with respect to its initial position, because in walking the heel shifts and stops before the sole strikes the ground resulting in greater shifting of the toe. The direction of angular and lateral shifting and turning depends upon the particular direction of slant of the ribs with respect to the longitudinal axis of the particular heel and/or sole element.
As shown in FIGURE 2, in order to correct a "toe-out" condition, the ribs 22 on the soles 14 and heels 16 should form an acute angle with the longitudinal axis of these elements in the second quadrant for the right shoe R as shown at a, and first quadrant for the left shoe L as shown at b. By reversing the direction of slant of the ribs 22 with respect to the longitudinal axis, as in FIGURE 3, wherein the sole 15 and heel 17 of the right shoe R has its ribs forming an acute angle with its longitudinal axis in the first quadrant as shown at c, and wherein the acute angle is formed in the second quadrant on the left shoe L as shown at d, a "toe-in" condition can be corrected. The angular shift of the shoes in FIGURE 3 is opposite to that in FIGURE 2, as shown in phantom lines.

FIGURES 5 and 7 illustrate a pair of slightly modified orthopedic shoes 36. The shoes 36 are used to correct a condition known as inversion or "ankle roll inwards." In this abnormality, an inner part of each foot is turned inwardly to engage the ground, whereas an outer portion remains off the ground.

In order to correct the inversion condition, an evasion heel 38 and/or evasion sole 36 is provided and secured to the bottom of each shoe in the pair 36. As shown in FIGURE 5 and 7 the ribs 22 terminate in spaced relation to the inner lateral edges of the heels and soles 38 and 36. Pressure on the resilient heels and soles 38 and 40 will cause the ankle of each foot to rotate outwardly due to the resilient ribs 22 deforming under the weight of wearer, along with correcting for "toe-in" as well, if any is present. By reversing the slant of the ribs 22 with respect to the longitudinal axis in the shoe pair 36 inversion as well as "toe-out" can be corrected.

FIGURES 4 and 6 illustrate a modified pair of shoes 30 which can be used to correct eversion or "ankle roll outwardly." The shoes 30 include an orthopedic heel 32 and/or sole 34 whose ribs 22 terminate in spaced relation to the outer lateral edges of the heels 32 and sole 34. Weight applied to the heel 32 and sole 34 will cause the ankle of the wearer to roll inwardly correcting for "ankle roll out" or eversion condition. This is due to the resilient ribs 22 deforming under the weight of the shoe wearer. In addition, the slant of the rib 22 depicted in FIGURE 6 will correct for any "toe-out" condition present, but it should be understood that by reversing the slant of the ribs with respect to the longitudinal axis eversion and "toe-in" could be corrected by the shoes 30.

If "toe-in" or "toe-out" is not present, but only inversion or eversion, the shoes 30 or 36 could be formed with ribs 22 which are vertically perpendicular to the second side 20 of the heel and sole and terminate spaced from their outer or inner lateral edges.

While specific embodiments of my invention have been disclosed in the foregoing description, it will be understood that other various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

1. An orthopedic shoe element adapted to be secured to the bottom of a shoe, said element comprising first and second opposed sides, said first side being substantially flat and said second side including means for turning said element and an attached shoe in an angular direction relative to their respective longitudinal axes in response to ground engagement of said shoe under the weight of the shoe wearer, said turning means including a plurality of resilient, substantially parallel, spaced ribs arranged at an acute angle with respect to the longitudinal axis of said element, each of said ribs extending in a substantially straight line over a major portion of the width of said element and projecting from said second side at an angle therewith canted toward one end of the longitudinal axis of said element.

2. An orthopedic shoe element in accordance with claim 1, wherein the spacing between any two of said ribs is greater than the height of any one of said ribs.

3. An orthopedic shoe element in accordance with claim 1, wherein said ribs start at one lateral edge and terminate in spaced relation to the other lateral edge of said element.

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RICHARD A. GAUDET, Primary Examiner
JOHN D. YASKO, Assistant Examiner