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[54] **METHOD AND MEANS FOR THE TREATMENT OF INTERNAL TIBIAL TORSION**

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[51] **Int. Cl.** **A43b 7/24**

[58] **Field of Search** ..... 128/583, 584, 585, 128/80 R, 80 A, 80 B, 80 J, DIG. 15; 36/80, 1

[56] **References Cited**

UNITED STATES PATENTS

3,265,063	8/1966	Friedman	128/80 A
3,413,977	12/1968	Soble et al.	128/583

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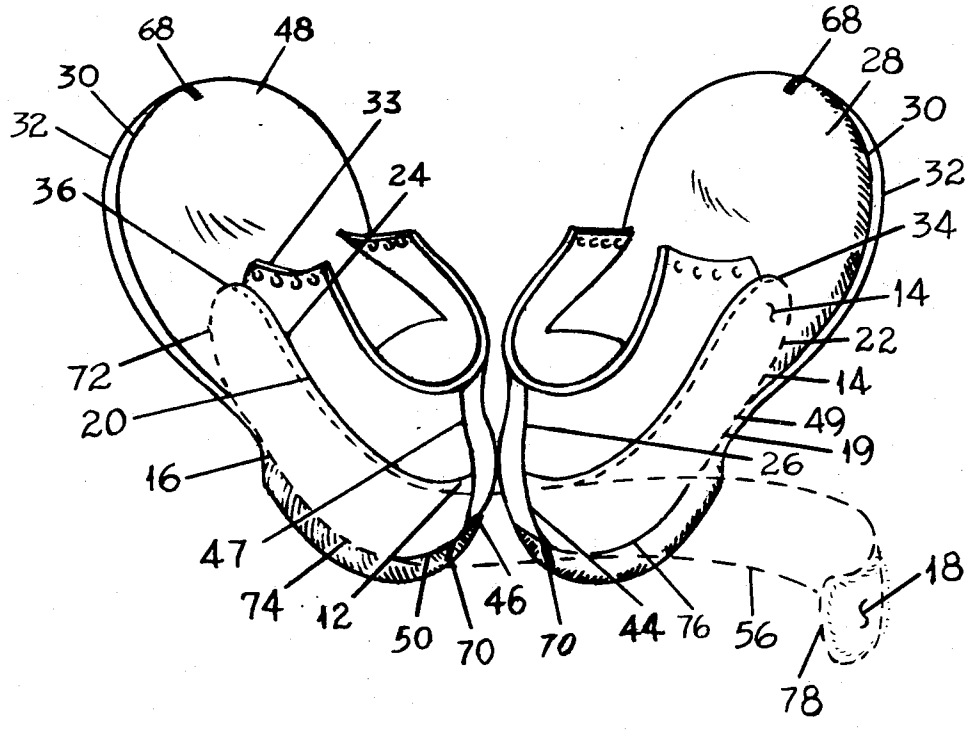
[57] **ABSTRACT**

An assembly for treatment of internal tibial torsion comprising a pair of shoes having affixed to the outer side thereof strips of flexible material having interlocking surface elements and an elongated cover strip having a surface with coordinate locking elements adapted to extend over the strips on the shoes to lock the shoes at a predetermined angle with the heels of the shoes together.

6 Claims, 5 Drawing Figures



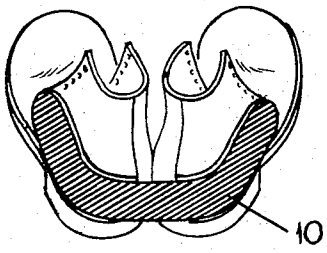


FIGURE 1

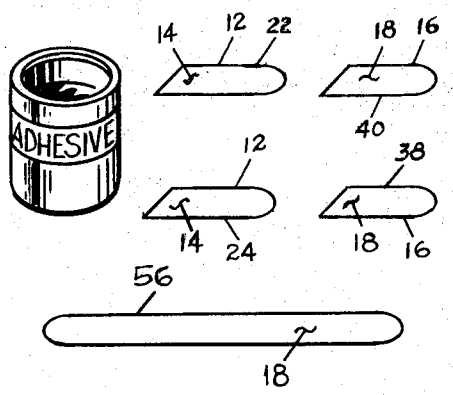


FIGURE 2

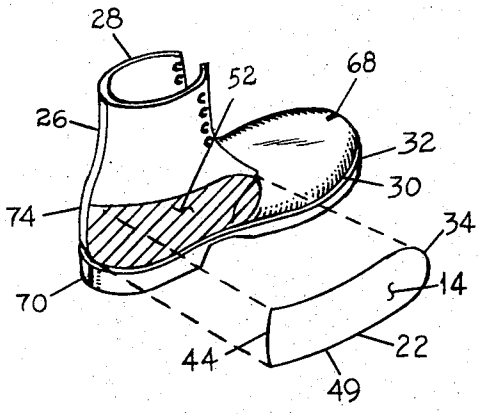


FIGURE 3

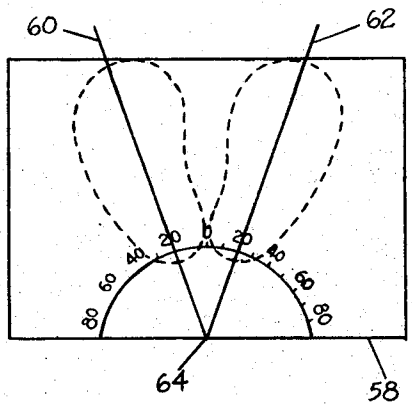


FIGURE 4

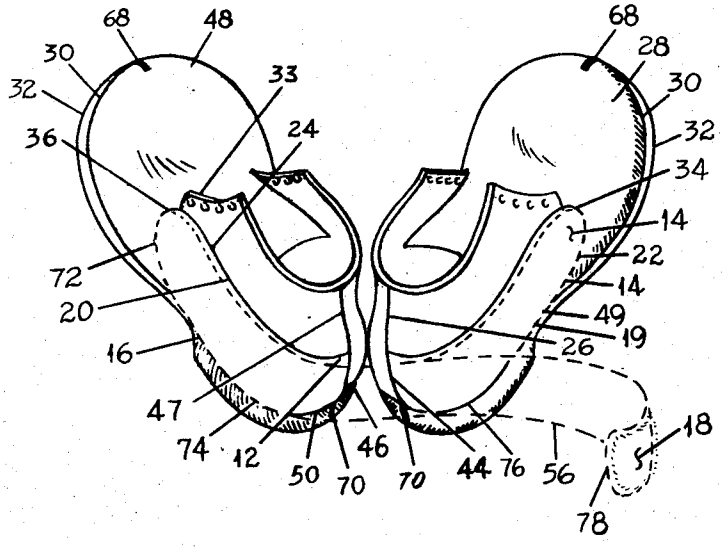


FIGURE 5

METHOD AND MEANS FOR THE TREATMENT OF INTERNAL TIBIAL TORSION

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to orthopedic methods and devices, and more particularly to an improved orthopedic method and device for adjusting and maintaining shoes at a prescribed angle when used in the treatment of internal tibial torsion.

2. Description of the Prior Art

In the past, corrective devices used in the treatment of internal tibial torsion have included rather heavy and complicated devices constructed of metal, and using metal screws, clamps, etc. for installation and adjustment. Some of these have been "clamp-on" devices which have projections that are destructive of bed sheets and furniture covers. Further, they exhibit some danger of causing injuries to persons wearing or adjusting them and, being generally rigid, they are not particularly comfortable. Still further, in some instances, the methods used in installation and adjustment of the devices involve considerable time and effort and with certain of them special purchased tools must be used to enable proper use of them.

SUMMARY OF THE INVENTION

Accordingly, it is an object of this invention to provide an improved method and means for the treatment of internal tibial torsion wherein the aforesaid difficulties are eliminated.

These and other objects, features and advantages are accomplished in the present invention in which: first, the shoes of the patient are relatively positioned with heels together at a predetermined treatment angle; second, a strip of flexible material having one surface adapted to mechanically innerlock with a surface of a mating material is affixed to the outer sides of the shoes, extending from a position from the rear of the shoe forward a distance approximately in line with the tip of the blucher end of the shoe; third, a strip of coordinate mating material adapted to mechanically innerlock with the strips affixed to the shoes is positioned in an engaging position over the affixed strips and thereby locks the shoes in position to the extent that they are thus unable to assume a smaller relative angle. In this manner, the patient is forced to maintain the feet in at least the angle determined by this method and means.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view showing the application of an outer interlocking strip used to lock the shoes in position.

FIG. 2 is a pictorial illustration of a kit of the components utilized in the practice of the invention.

FIG. 3 is a perspective view of a shoe and basic strip preparatory to attaching the base strip to the shoe.

FIG. 4 is a schematic illustration of gauge placement of the shoes in order to determine the position in which the shoes are to be worn by the patient.

FIG. 5 is a perspective view illustrating a last step in the procedure wherein the outer interlocking strip is cut to a precise length.

DESCRIPTION OF THE PREFERRED EMBODIMENT

An orthopedic correction device **10** is fabricated from strips of mating or inter-engaging types of flexible material wherein one type material **12** has a surface **14** which includes a multiplicity of open-looped bristles and the other type **16** has a mating surface **18** which is provided with a crinkled nap. Two strips are thus interlocked or fastened when the inter-engaging surfaces are pressed together. Such fastening materials are commercially available under the trademark Velcro, and hereinafter the two types of material will be referred to as "positive" and "negative" material, strip **12** being of "negative" material and strip **16** being of "positive" material. The strips of the material are of a width equal to approximately one-half the height of shoes **20** to which correction device **10** is applied. The method of practicing the invention is as follows:

First, the length of two strips **22** and **24** are determined by placing the end of one of the strips even with back seam **26** of shoe **28** or at the center of the shoe heel, and with the lower edge of strip **22** positioned along the top edge **30** of sole **32**, strip **22** is extended toward the toe of the shoe. A mark is then made on strip **22** opposite blucher **33** of the shoe to indicate the correct length. Alternately, a length would be chosen which is approximately two-thirds the length of shoe **28**. Strip **22** is then cut to the indicated length and the second strip, strip **24**, cut to the same length. Forward extending ends **34** and **36** would then be rounded off as shown.

Next, using either strip **22** or **24** as a pattern, two identical dimensioned strips **38** and **40** are cut from Velcro "positive" material and are adapted to be attached to exposed surfaces **14** of strips **22** and **24** to cover the surfaces **14** for protection during normal wear periods, when treatment is not being effected.

Next, the smooth or non-engaging sides of strips **22** and **24** are glued to shoes **28** and **48**, as shown, being in a position, as when measured, so that ends **44** and **46** of strips **22** and **24** are identically positioned in line with rear seams **26** and **47**, respectively. The lower edges **49** and **50** of strips **22** and **24** are aligned with the top edge **30** of sole **32**. A better bond between the strips and the shoes is achieved if outer region **52** of the shoe to be covered by strips **22** and **24**, is lightly abraded before glue is applied.

The next step is to determine the length of interlocking strip **56**. It is determined by using calibration chart **58**, which is in the form of a protractor calibrated in positive and negative angular designations with the angle between like numerical designations corresponding to the angular displacement in degrees indicated by one of them. First, lines **60** and **62** are drawn from the point of origin **64** through positive and negative angular designations of the treatment angle. For purposes of illustration the treatment angle is assumed to be **40** degrees. Toe and heel index marks **68** and **70** are made on each shoe at points intersecting a center line fore and aft through the shoe and the right shoe **28** placed on line **62**, and the left shoe **48** placed on line **60**. The heel and toe marks are aligned with lines **62** and **60**, respectively. The heels of the shoes are positioned in contact and at an equal distance from the point of origin **64**.

Next, a strip **56** of positive Velcro is cut to a length slightly longer than needed and initially installed by aligning an edge **72** with edge **36** of strip **24** and pulling it tautly around the heels **74** and **76**, extending it over strip **22** beyond end **34** of strip **22**. A mark is then made

on strip **56** at a point opposite the end of strip **22** and strip **56** removed and cut to a length indicated by this mark. This operation is, of course, performed with the shoes maintained at the prescribed angle.

Finally, the corners of the ends **72** and **78** of strip **56** are trimmed to provide circular end cuts as shown.

The corrections provided by this invention may be employed with various type shoes, particularly shoes prescribed by a physician. For example, a "straight last" shoe can be employed on one foot and a "reverse last" or club foot shoe used on the other foot. The reverse last shoe may be secured in any designated angular bias. In fact either shoe and last can be set at one degree of angular bias with respect to the leg, and the other set at another degree of angular bias. For example, the right shoe might be set at 20° external rotation and the left shoe at 60° external rotation.

By means of the foregoing described method and construction there is provided a method and device for use in applying a prescribed angular bias between a pair of shoes, and thus to the feet of a patient wearing the shoes. Calibration, once achieved, as explained above, is maintained over extended periods of usage and treatment. There are no rigid arms extending between the shoes or protruding from the shoes and thus this invention provides a most comfortable as well as a reliable method and means of effecting a desired treatment.

What is claimed is:

1. The method of orthopedic adjustment for correction of internal tibial torsion comprising:

affixing to a pair of shoes of a patient an elongated base strip of flexible material having an outer surface adapted to mechanically engage a mechanically related surface, said base strip being affixed to an outer side of each shoes of said pair of shoes and being positioned generally parallel to the bottom of a shoe and extending from a point near the rear of the shoe forward;

positioning said shoes with heels together at a predetermined angle with respect to lines corresponding to fore and aft centerlines of the shoes;

an elongated outer locking strip, of a material having a surface adapted to engage and lock with said base strip on said shoe, is extended from the front edge of one of said base strips rearward around the heels of said shoes and in engagement with both said base locking strips to a point at least even with the front edge of the other base strip whereby said shoes are restrained from assuming a lesser angle than said predetermined angle; and

clipping off excess length from said outer strip whereby with the shoes at the prescribed angle the ends of said outer strip will be adjacent the front end of both said base strips, facilitating the repeated accurately locked positioning of the shoes.

2. The method as set forth in claim **1** wherein said strips are strips of Velcro interlocking material.

3. The method set forth in claim **1** wherein said base strips extend at least three-fourths distance from the rear of each shoe to the front of each shoe.

4. An orthopedic correction device for supporting a pair of shoes at a minimum predetermined angle, when worn, comprising:

first and second strips of flexible material having an outer surface interlocking with a coordinately surfaced strip and each of said first and second strips extending forward from the rear of a shoe for a distance approximately three-fourths the length of a shoe;

an adhesive affixing the inner surfaces of said first and second strips to the outer sides of a pair of shoes as worn;

a third strip of said coordinately surfaced material extending around the back of the pair of shoes converting and innerlocking with said first and second strips, whereby the shoes may be indexed at a selected angle between zero and 90° with heels together thereby preventing said shoes from assuming a smaller angle than said selected angle by the innerlocking of said third strip with said first and second strips.

5. An orthopedic correction device as set forth in claim **4** wherein said strips are substantially the same width and said width is between 1½ and 2 inches.

6. An orthopedic correction device for the feet as set forth in claim **4** wherein said third strip is of a length to precisely extend from the front edge to front edge of said first and second strips with said shoes positioned at a relative angle of between zero and 90° between said shoes.

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