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C. W. COPLANS

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FOOT-SUPPORTING AND CORRECTIVE DEVICES

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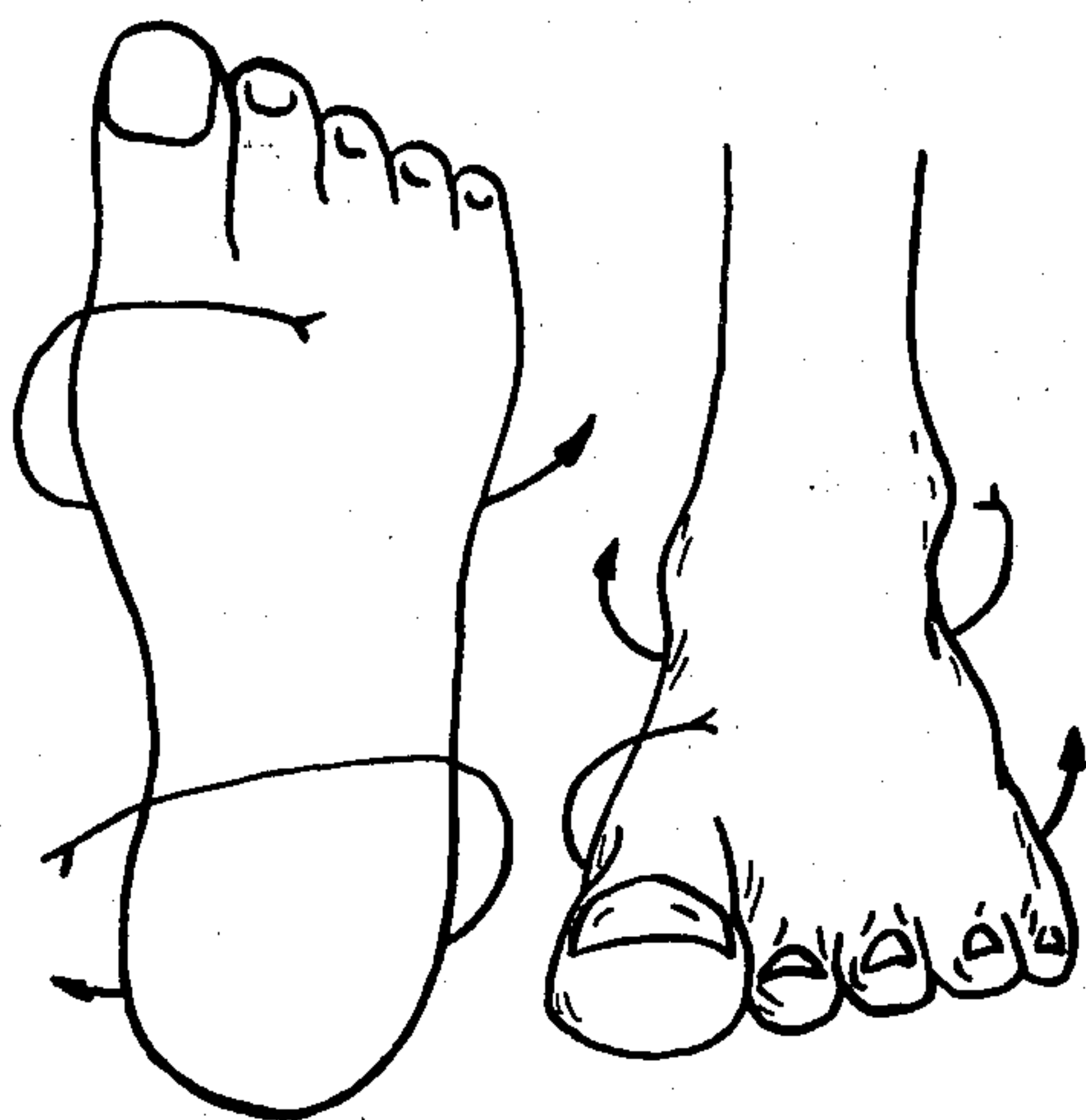


FIG. 1

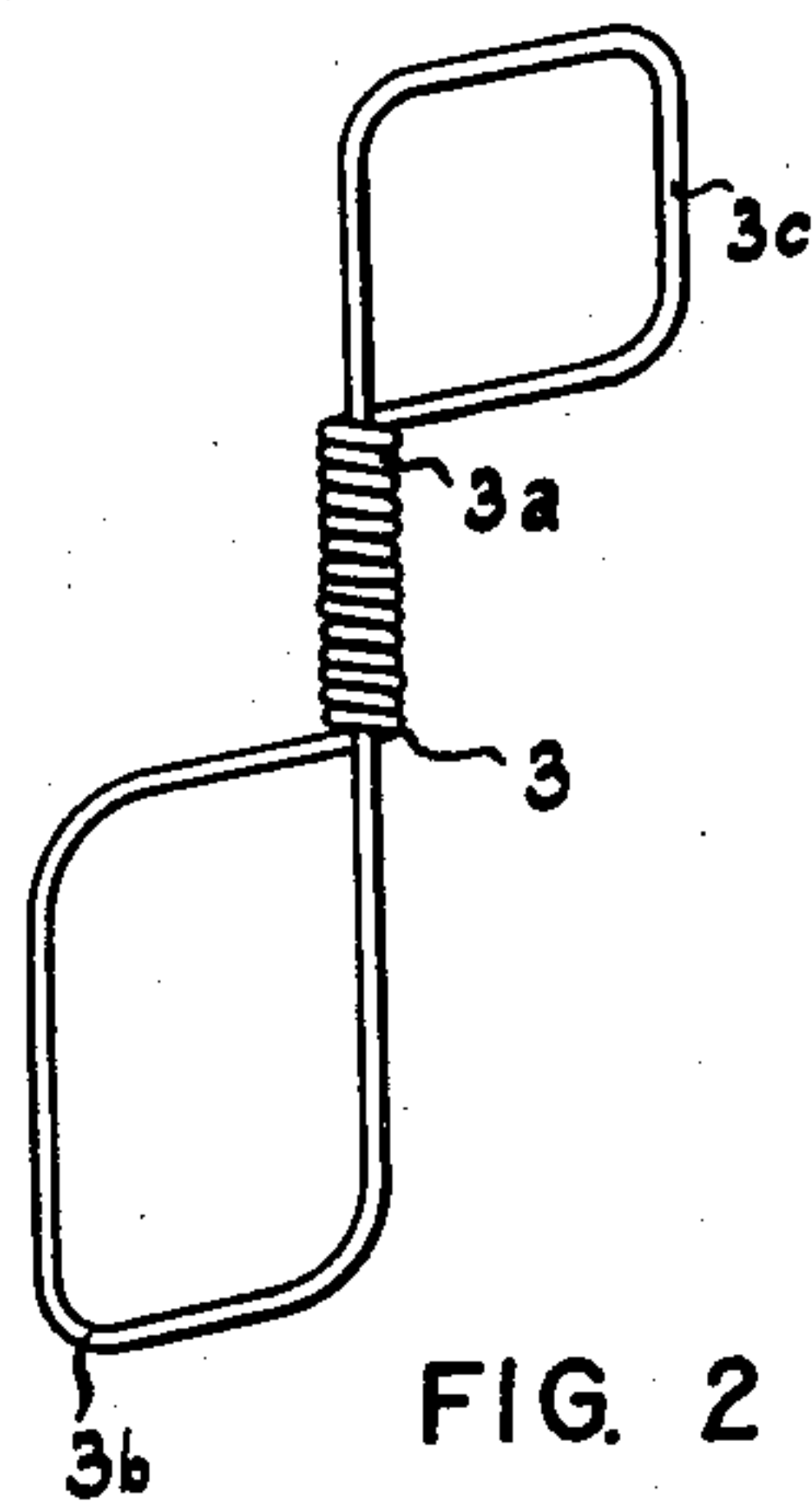


FIG. 2

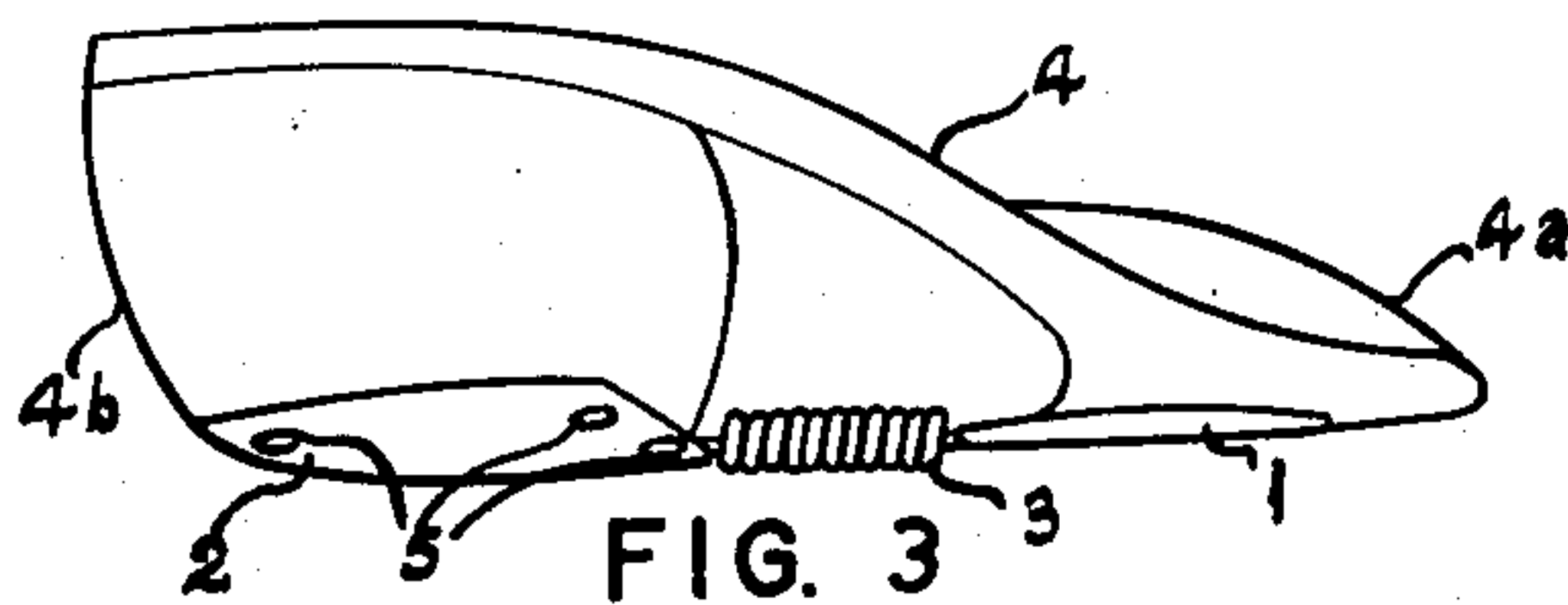


FIG. 3

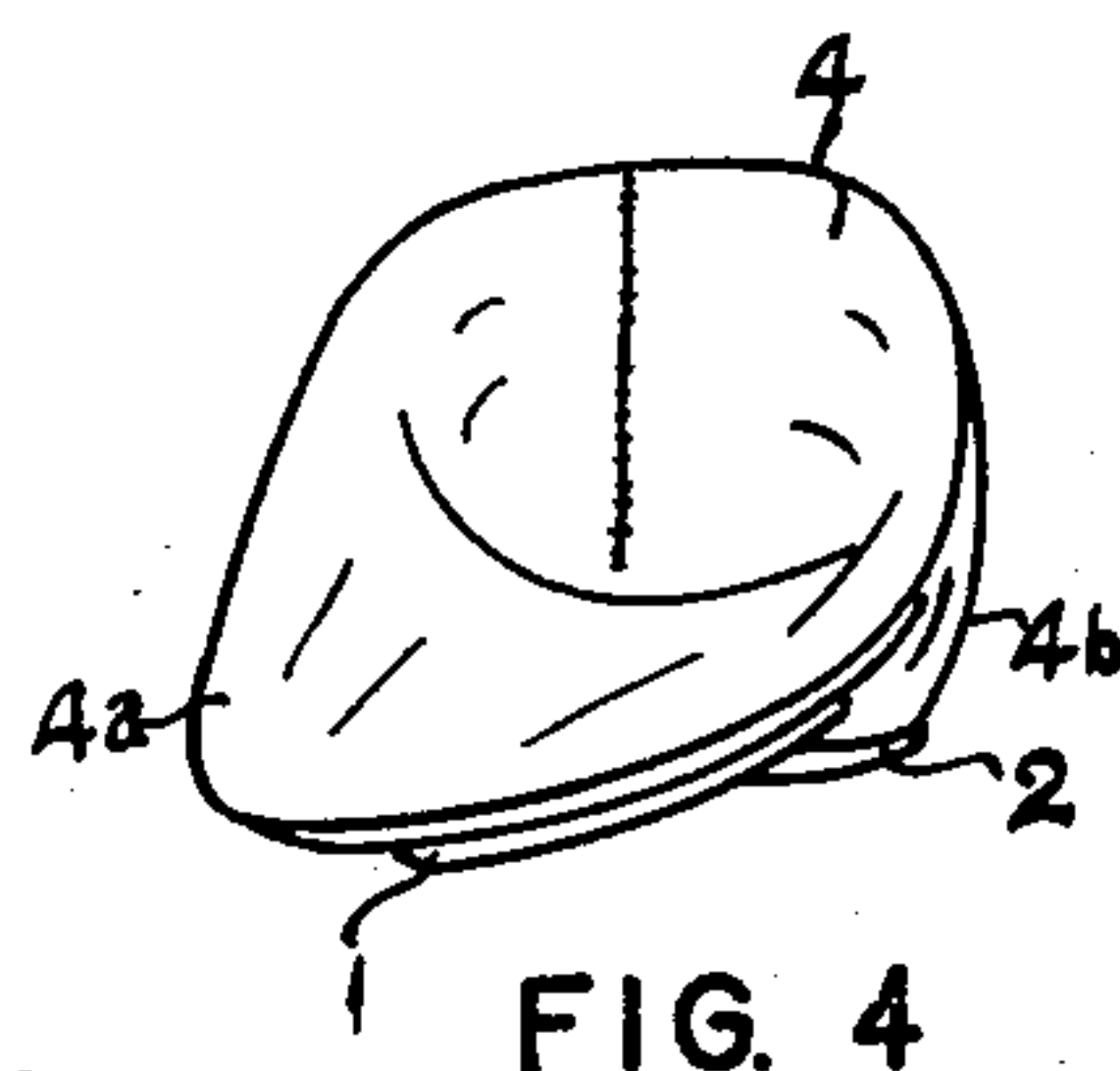


FIG. 4

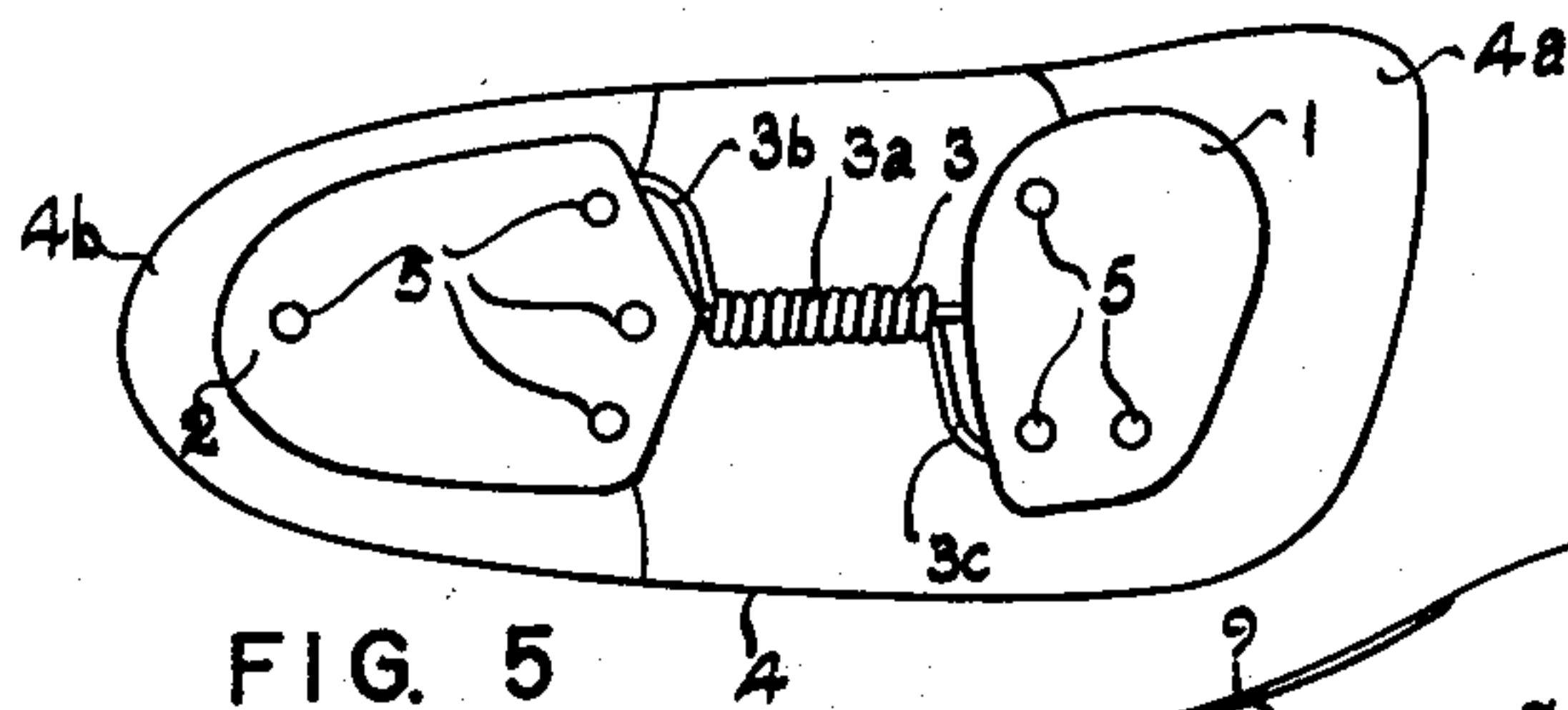


FIG. 5

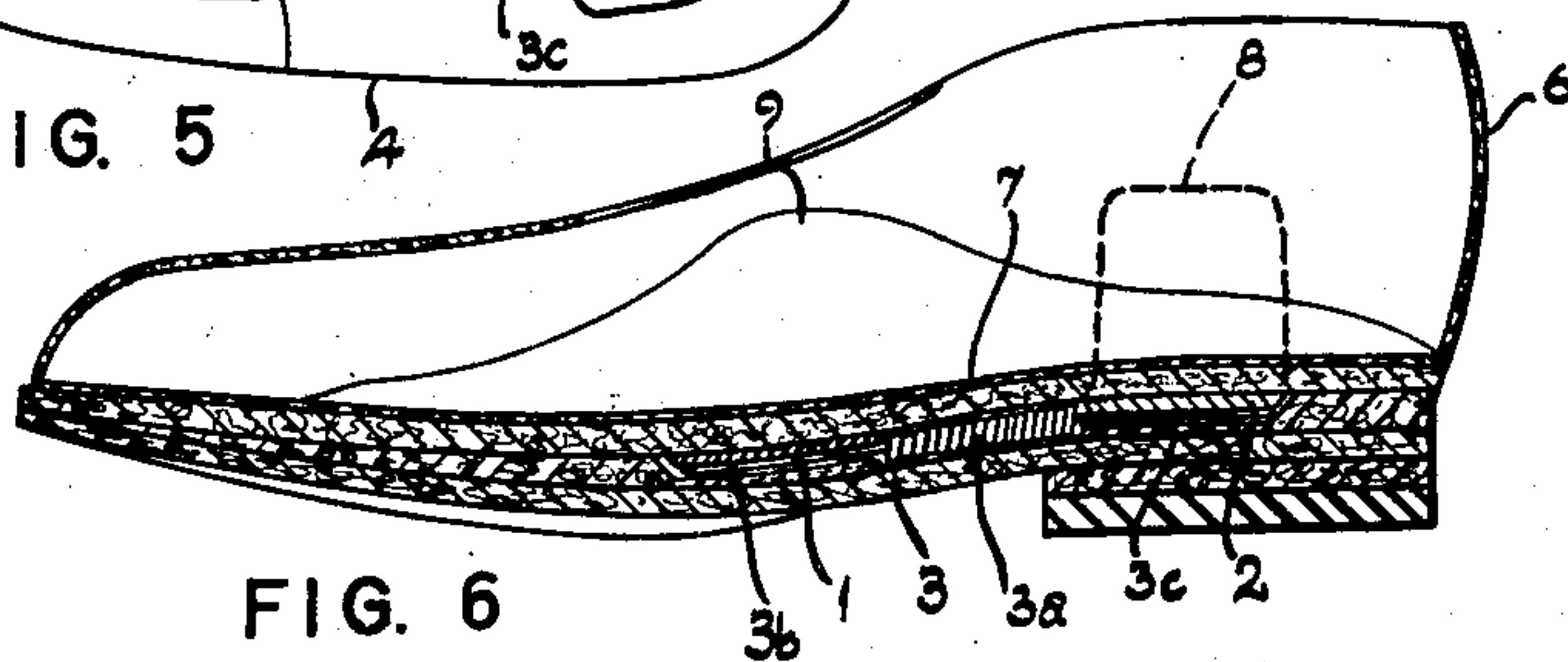


FIG. 6

Inventor

By

Attorney

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FOOT-SUPPORTING AND CORRECTIVE DEVICES

Carl Waddington Coplans, Rondebosch, Cape Province,
Union of South Africa

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6 Claims. (Cl. 36—71)

This invention relates to devices for the support of the foot and provides a device having a corrective action whereby a flat foot may be remodelled to correct functional form, which device may be constructed as a separate article from the wearer's shoe to be inserted into or removed from the latter as desired, or as an integral and permanent feature of such shoe. The device provided by the invention, in any of its forms, furthermore, imparts a welcome resiliency to the walking step of the wearer in addition to or as a part of the foot-form correcting effect.

According to the invention, a device as aforesaid comprises a pair of relatively stiff members engageable respectively by the anterior portion of the foot and by its posterior portion and interconnected by resilient means devised to exert a torsional force between said foot portions about an axis extending generally along the length of the foot.

The interconnecting resilient means is devised to exert the said torsional force on the posterior portion of the foot to push it inwardly and to thrust upwardly and laterally on the anterior part so as to tilt the outer aspect thereof upwardly with respect to its inner side. Under the torsional forces to which the foot is subjected in this manner, it is thus resiliently twisted, through the aforesaid members so that the forefoot tends to turn the sole of the foot outwards and the lower aspect of the heel tends to turn inwards, whereby to correct the defect "flat foot."

In order that the invention may be more clearly understood and carried into effect, reference will now be made to the accompanying sheet of drawings, wherein like references refer to like parts throughout the several views.

In the drawings:

Fig. 1 illustrates a plan of a right foot and elevation of a left foot showing the direction of the torsional forces exerted thereon by the device;

Fig. 2 is a plan view of a torsion element made according to the invention;

Fig. 3 is an elevation view of an insert device for a left foot support constructed according to the invention;

Fig. 4 is an end view of Fig. 3, as seen from the sole end;

Fig. 5 is a bottom view of Fig. 3; and

Fig. 6 is a longitudinal cross-section of a shoe showing the device built into it.

Referring to the drawings the device comprises a sole plate member 1 and heel plate member 2 engageable by the anterior and posterior portions respectively, of a foot, a torsion element 3 connecting said members 1 and 2 together, and a shaped flexible sheet element 4 to the underside of which the said members 1 and 2 and torsion element 3 are fitted.

The two members 1 and 2 are each of stiff steel or other metal plate or any other suitable material, secured by rivets 5 in suitably spaced relationship along the underside of the flexible sheet element 4 made of leather or like material, of suitable outline in the flat condition to

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fit along and over the insole of the shoe 6 with the anterior plate member 1 substantially flat to conform generally with the contour of the forefoot and the posterior plate member 2 upwardly concave to conform generally with the contour of the underside and inner aspect of the heel.

For the torsional resilient loading between the two plate members 1 and 2 in the opposite senses above referred to, they are operatively connected by a strong torsion element 3 extending generally along the long axis of the flexible sheet element 4, under the latter, and rigidly connected by its respective ends to the two plate members 1 and 2, the setting of the ends of the torsion element 3 being such that the anterior 4a and posterior 4b portions of the flexible element 4, when not subjected to weight of the user applied thereon through the foot, are twisted relatively in the aforementioned opposite senses through a substantial angle and more particularly about a line running obliquely outwardly and rearwardly of the foot and over the torsion element 3.

Conveniently the torsion element 3 is composed of a length of spring wire bent over an intermediate part of its length into the form of a close-wound helical torsion spring 3a of desired strength and small diameter (e. g. of about 1/4" diameter or less) and of a length sufficient to bridge the space between the aforementioned two plate members 1 and 2, the end portions of the wire being formed into rectangular loops 3b and 3c respectively, adapted for imprisonment firmly between the respective plate members and the flexible sheet element 4 as these are being riveted or otherwise secured together as above indicated. The two loops 3b and 3c, which are configured respectively for complementary fitting against the relatively flat and the relatively dished anterior and posterior plate members 1 and 2 are approximately angularly offset rotationally with respect to the axis of the coil spring 3a for the required torsional loading between the plate members and the portions of the flexible element 4 under which they are attached.

The device may be complete in itself, adapted to be inserted into or removed from a shoe of ordinary construction. On the other hand the said device may be permanently assembled in a shoe 6, in which case the shoe, when not actually bearing weight of the user, will assume the twisted shape transmitted to it from the torsion element 3. The flexible sheet element 4 may serve as an insole of the footwear. Where the device is incorporated in the construction of a shoe 6, the shank 7 of the latter is designed or modified as may be necessary to permit the torsion element 3 to produce its desired torsional effect upon the shoe 6 and thus also upon the foot contained within it. In Fig. 6 a metal or like rigid stay 8 is incorporated in the shoe 6 to aid in supporting the inner part of the heel. This stay 8 may be formed integrally with the heel plate member 2, form part of the heel end loop or be a separate attachment. The insole member 9 is adapted to extend up inside along the arch of the foot.

In any embodiment of the invention, when the weight of the body is thrust upon the device, the latter by reason of its resilience yields temporarily and almost assumes the shape of an inert, corrective foot support. When the body weight is removed the device again exerts its dynamic effect so that the foot is continually being subjected to the corrective forces.

The device, or the shoe in which it is embodied, when it takes the full body weight does not flatten completely and the resilient action of the spring causes a cushioned springy walking effect.

In any of the possible embodiments of this invention, and referring for example to the specific description of the device hereinbefore given, the posterior part of the device, may be made of distinctly cupped form in which

the heel of the foot may be contained while the device is in use.

While preferred embodiments of the invention have been illustrated and described, it will be understood that the invention is in no way limited to those embodiments and that many changes may be made within the spirit and scope of the invention as defined by the following claims.

I claim:

1. A foot corrective device for correcting flat feet and the like comprising, spaced front and rear pressure applying members constructed of a relatively stiff material, the front and rear pressure applying members being adapted to releasably receive respectively the anterior and posterior portions of the foot, resilient means connecting the pressure applying members and arranged to apply to each of said members opposite rotational forces around an axis corresponding to a longitudinal axis extending generally along the length of the foot, and said resilient means being adapted to apply a rotational force to the rear pressure applying member in a direction for causing it to apply to the foot posterior portion inwardly directed rotational pressure and to apply a rotational force to the front pressure applying member in an opposite direction for causing it to apply pressure to the anterior portion in outwardly direction, whereby when the device is worn on a foot opposite rotational forces are constantly applied to the anterior and posterior portions of the foot respectively.

2. A foot corrective device according to claim 1, including a flexible element spanning said spaced pressure applying members and constructed of sheet material, said flexible element having upwardly extending portions shaped to receive at least a portion of a foot, and in which said spaced front and rear pressure applying members are disposed underlying said flexible element.

3. A foot corrective device according to claim 2, in which said front pressure applying member comprises a substantially contoured plate and the rear pressure applying member is dished.

4. A foot corrective device for correcting flat feet and the like comprising, spaced front and rear pressure applying members constructed of a relatively stiff material, the front and rear pressure applying members being adapted to releasably receive respectively the anterior and posterior portions of the foot, resilient means connecting the pressure applying members and arranged to apply to each of said members opposite rotational forces around an axis corresponding to a longitudinal axis extending gen-

erally along the length of the foot, said resilient means comprising a continuous length of wire bent into two spaced loop portions and having a helically wound span between said loops, and means for attaching one of the pressure applying members to each loop portion, whereby when the device is worn on a foot opposite rotational pressure is constantly applied to the anterior and posterior portions of the foot respectively.

5. A foot corrective device according to claim 4, in which said helically wound span of the wire corresponds substantially with said longitudinal axis and said loop portions are disposed offset angularly with respect to said helically wound span thereby to apply opposite rotational forces to said pressure applying members, and the offset of each loop being selected to correspond to a direction from which said rotational pressure is to be applied.

6. A foot corrective device for correcting flat feet and the like comprising, spaced front and rear pressure applying members each constructed of a relatively stiff material, the front and rear pressure applying members being disposed to releasably receive respectively the anterior and posterior portions of the foot, resilient means connecting the pressure applying members and arranged to apply to each of said members opposite rotational forces around a longitudinal axis extending generally along the length of the foot, said resilient means comprising a continuous length of wire bent into two spaced loop portions and having a helically wound span between said loops, means for attaching one of the pressure applying members to each loop portion, the loop portions being arranged to apply a rotational force to the rear pressure applying member in a direction for causing it to apply to the foot posterior portion inwardly directed rotational pressure and to apply a rotational force to the front pressure applying member in an opposite direction for causing it to apply pressure to the anterior portion outwardly; whereby when the device is worn opposite rotational pressure is constantly applied to the anterior and posterior portions of the foot respectively.

References Cited in the file of this patent

UNITED STATES PATENTS

2,227,429 Austin Jan. 7, 1941
2,518,649 Tydings Aug. 15, 1950

FOREIGN PATENTS

599,832 Great Britain Mar. 22, 1948