

O. SEMELEDER.
 APPARATUS FOR CORRECTING FOOT CROOKEDNESSES.
 APPLICATION FILED APR. 8, 1912.

1,114,389.

Patented Oct. 20, 1914.

Fig. 1.

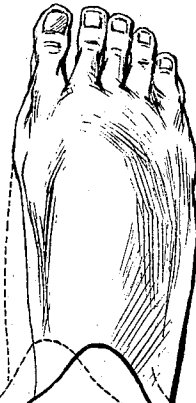


Fig. 2.

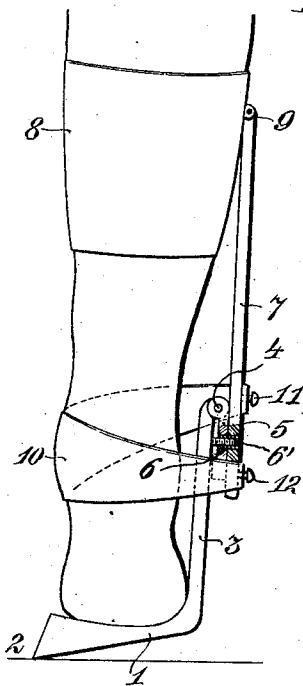


Fig. 3.

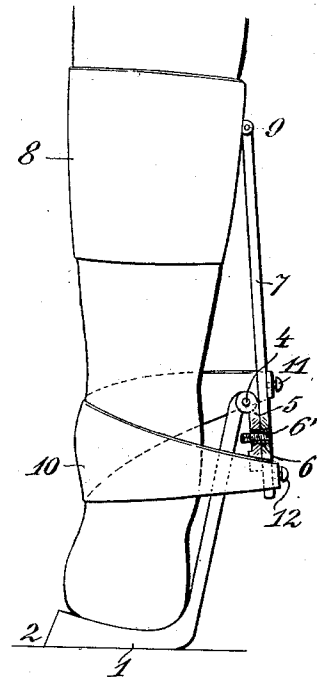


Fig. 5.

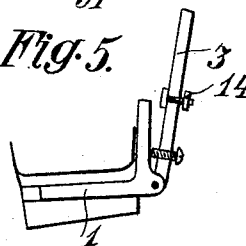
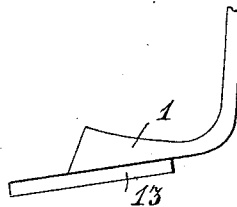


Fig. 4.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR CORRECTING FOOT CROOKEDNESSES.

1,114,389.

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To all whom it may concern:

Be it known that I, OSKAR SEMELEDER, medicine doctor, a subject of the Austro-Hungarian Emperor, residing at V. Franzensgasse 24, Vienna, in the Empire of Austria-Hungary, have invented an Improved Apparatus for Correcting Foot Crookednesses, of which the following is a specification.

I have found that the flat-foot arises not only, as it is hitherto suggested, simply by pressing down the foot vault, but also by distortion of the leg relatively to the foot around an axis passing at A (Figure 1) behind the heel joint. The inner ankle, which is situated normally at B moves by this distortion in the direction of the arrow x into the flat-foot position B¹ and the leg together with the ankle will be distorted inwardly.

The apparatus embodying the invention consists essentially in means by which, while avoiding an action upon the knee-joint, a distortion of the ankle of the leg will be effected in such manner that the ankle will be turned into the normal position. According to the present invention the said effect will be obtained in such way that a leverage produced by the body weight of the patient will act upon a splint, which is to be fastened on the leg and is capable to be rocked at right angle to the direction of going, in such way, that the said splint is allowed to rock in the manner of a toggle lever in a direction opposite to the ankle, *i. e.* in the direction indicated by the arrow y (Fig. 1), whereas a rocking in the other direction will be prevented. By this means will be effected that a leverage takes place only in the desired direction, so that the leg (ankle) fixed by belts or sockets or by the shoe or the like to the said splint will be brought into the normal position and held fast in the same. The above mentioned effect will be still improved by arranging the splint so as to be capable of rocking also in the direction of going, whereby the natural turning motion of the foot in the ankle-joint on walking is not prevented.

Fig. 1 is a diagrammatic plan view illustrating the operation of the improved apparatus. Figs. 2 and 3 of the annexed drawing show an example of a correcting apparatus according to the present invention in two functional positions. Figs. 4 and 5 show details.

The leg of the patient stands upon a base

1 which rests only at one side and will in setting the foot on ground contacting the latter at first by the edge 2.

3 is a splint which is connected at the lower end to the foot tread 1 either rigidly or by a joint or the like so as to be capable of adjusting at different angles. The upper end of the said splint 3 is connected by a joint 4 to an intermediate piece 5. The latter is connected by a hinge 6, which allows the turning of the splint in the direction of going, to a bar 7, which may be secured to the leg, by a rim 8 or a belt or socket or the like either rigidly or movably by a hinge 9.

By the weight of the patient the angular lever 1, 3 will be rocked about the edge 2 and the side bars 3, 7 about the hinge or joint 4 in the manner of a toggle joint (Fig. 3). The belt or band 10 being applied around the ankle and secured at 11 and 12 by means of screws or heads, the ankle (Fig. 1) will be brought from the position B¹ back into the position B. The belt 10 may be substituted conveniently by the upper leather of the shoe. The effect thus obtained may be reinforced or diminished by the following means, *i. e.* by gradually tightening or releasing the belt or by altering the angle position between the foot tread 1 and the bar 3 or by altering the angle position between the bar 3 and the bar 7 or by shifting the tilting edge 2.

The angle position between the bar 3 and the bar 7 may be altered for example by an adjustable stop. In the example illustrated the said adjustable stop will be formed by a screw 6¹, which is passed through the hinge bolt 6. The angle position between the said parts 3 and 7 may also be altered by bending the bar 7. Moreover the angle position between the foot tread 1 and bar 3 may be altered by a joint capable of being adjusted and locked as by a joint provided with a stop 14 (Fig. 5). The bar 3 may also be removably mounted on the foot tread, as, for instance, by being passed into a suitable socket or recess as shown for example in Fig. 5, the said parts may be arranged and connected in any other suitable manner.

The tilting edge 2 may be shifted or adjusted by lengthening or shortening the lever arm 1 for example in such manner, that the lever arm 1 is provided with a sliding part 13 which by moving in one direction or the other effects the lengthening or shortening of the said lever arm (Fig. 4).

Conveniently the hinge 4 is arranged above the hinge 6, increasing thereby the deflection of the rocking toggle joint.

As, in the case of a club-foot, the point C (outer ankle) Fig. 1, is being moved from C to C' by the opposite distortion of the shank relatively to the foot (arrow *y*), the same apparatus with reversed arrangement may be used for correction of the club-foot.

I claim as my invention—

1. An orthopedic appliance for correcting foot deformations comprising a base or tread, and a supporting member for the base connected therewith at one side and adapted to be secured to the leg, said member being capable of bending and folding in a direction away from the ankle and perpendicular to the direction of walking under the leverage exerted by the weight of the body causing the base to turn about an edge thereof to exert pressure on the ankle at right angles to the direction of walking.

2. An orthopedic appliance for correcting foot deformation comprising a base supported at one side, a member adapted to be secured to the leg, and forming with the base a toggle lever folding in a direction away from the ankle and at right angles to the direction of walking, and means to limit the folding of the toggle lever in the opposite direction, said toggle lever being actuated by the weight of the body around one of the edges of the base.

3. An orthopedic appliance for correcting foot deformations comprising a base supported at one side, a member adapted to be secured to the leg, and forming with the base a toggle lever, folding in a direction away from the ankle and perpendicular to the direction of walking, said toggle lever being actuated by the weight of the body around one of the edges of the base, and means permitting movement of the member secured to the leg in the walking direction.

4. An orthopedic appliance for correcting foot deformations comprising a base or tread normally contacting with the ground only at its edge adjacent one side of the foot,

a bar or splint adapted to be secured to the leg, and connections between said tread and splint including two pivots extending substantially at right angles to each other, the pivot allowing movement perpendicularly to the walking direction being arranged higher than the pivot allowing movement in the walking direction.

5. An orthopedic appliance for correcting foot deformations of the character referred to, comprising a base or tread normally contacting with the ground only at its edge adjacent one side of the foot, a bar or splint adapted to be secured to the leg, and connections between said tread and splint including two pivots extending substantially at right angles to each other, for the purpose described.

6. In an orthopedic appliance for correcting foot deformations in which the weight of the body acts by leverage upon the deformity, the combination of a base or support, a bar adapted to be secured to the leg and connected with said foot support by means permitting movement of the bar away from the ankle and perpendicular to the direction of walking, and an adjustable stop for limiting movement of the bar in the opposite direction.

7. In an orthopedic appliance for correcting foot deformations in which the weight of the body acts by leverage upon the deformity, the combination of a base or support, a bar adapted to be secured to the leg and connected with said foot support by means permitting movement of the bar away from the ankle and perpendicular to the direction of walking and also movement of said bar in the walking direction, and an adjustable stop for limiting movement of said bar toward the ankle.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DR. OSKAR SEMELEDER.

Witnesses:

HUGO KEIK,
ADA MARIA BERGER.