

(No Model.)

A. H. HAMEL & A. N. HIBBERT.
ORTHOPEDIC APPLIANCE.

No. 604,044.

Patented May 17, 1898.

Fig. 1.

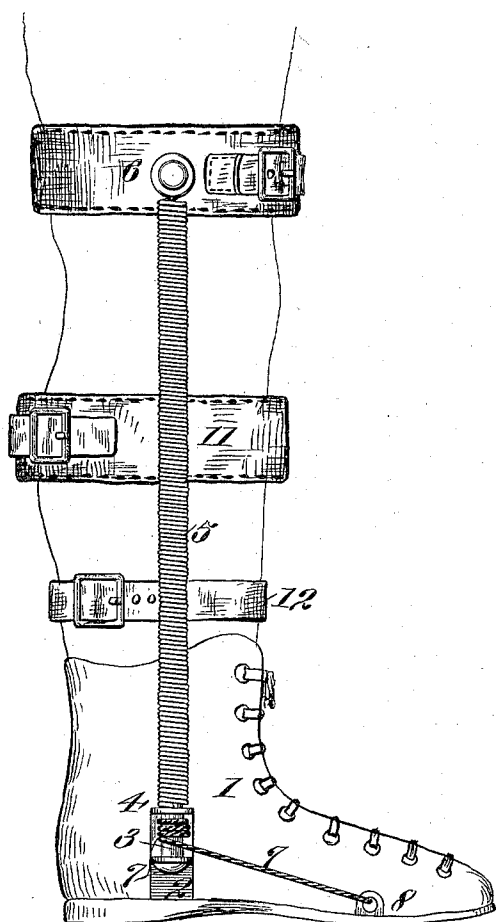


Fig. 2.

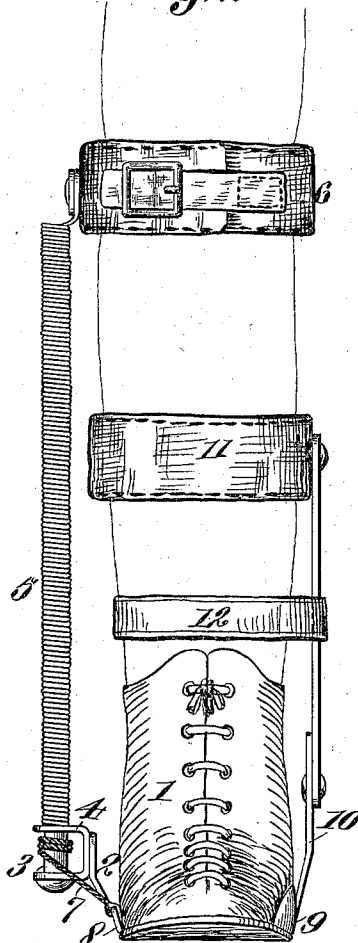


Fig. 3.

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UNITED STATES PATENT OFFICE.

ALBERT H. HAMEL AND ARTHUR N. HIBBERT, OF DE SOTO, MISSOURI;
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ORTHOPEDIC APPLIANCE.

SPECIFICATION forming part of Letters Patent No. 604,044, dated May 17, 1898.

Application filed August 14, 1897. Serial No. 648,211. (No model.)

To all whom it may concern:

Be it known that we, ALBERT H. HAMEL and ARTHUR N. HIBBERT, citizens of the United States, and residents of De Soto, in the county of Jefferson and State of Missouri, have invented a new and useful Orthopedic Appliance, of which the following is a specification.

Our invention relates to orthopedic appliances, and has for its object to provide a device for the correction of deformities of the foot, especially those deformities known as "talipes varus" and "talipes valgus."

To this end our invention consists in the construction hereinafter described and claimed.

In the accompanying drawings, which form part of this specification, Figure 1 is a side view of our device. Fig. 2 is a front view thereof, and Fig. 3 is a detail view on the side of the shoe not seen in Fig. 1.

The shoe 1, to which our improvement is applied, is of the ordinary style, but with its sole made rigid, as by means of a metallic plate or insole secured between the ordinary main sole and insole. In the heel is fastened a stiff plate 2, which projects therefrom laterally and upwardly and constitutes a support for a vertically-arranged drum or pulley 3. This drum or pulley may be variously mounted on its support. For instance, as shown in the drawings, the supporting-plate 2 has another stiff plate 4 fastened thereto, whose ends are bent horizontally and are perforated in vertical alinement. The drum or pulley is a bolt headed at its lower end and extending up through the perforations in the plate 4. The upper end of the bolt is soldered or otherwise fastened to the lower end of a torsion-spring 5, which is preferably of the common form of helical wire spring. The upper end of the torsion-spring is fastened to a band 6, adapted to be buckled or otherwise fastened on the leg. The bolt which constitutes the drum or pulley is perforated and has a cord 7, of catgut or other suitable material, extending through said hole and tied. The other end of said cord is secured to the fore part of the sole or preferably to a plate 8, projecting from the sole and provided with an eyehole for the cord. Outside of the shoe on the opposite side is an upturned plate 9, curved to conform to the

ball of the great toe, against which it is arranged to press. The plates 8 and 9 are preferably made of the same piece of metal arranged in the sole and extending from side to side thereof.

In addition to the parts hereinbefore described it is preferable to use a stiff upright bar 10, fastened to the heel of the shoe and jointed at the ankle. The upper end of this bar has a band 11 fastened thereto and adapted to be fastened around the calf of the leg. Another band 12 may also be used to encircle the leg and the upright bar above the shoe-top.

The operation of our device is as follows: The shoe having been fitted to the foot and laced or otherwise securely fastened, so that the foot will stay on the sole of the shoe, the band 6 is turned. This turning of the band 6 is communicated through the spring to the swivel-bolt at its end, which constitutes a drum, around which the cord is wound. After the slack in the cord is thus taken up the continued turning of the band 6 is absorbed in the torsion of the spring, which thus may be made to acquire any force desired for it. When the desired degree of force is attained, the band 6 is fastened around the limb, ordinarily above the knee. In this condition the entire force of the spring tends to turn the swivel-bolt or drum, and thereby wind the cord. On account of the elevation of the drum and its distance laterally from the foot the force exerted by the spring is both an upward pull and an outward pull. The relative strength of these pulls may be varied by changing the location of the drum according to the well-known law governing the resolution of forces. When the shoe is pulled laterally, the curved plate 9 presses the foot with the shoe and thus keeps the toes in normal relation. The upright bar and bands are intended to give support to the foot and limb.

The particular advantages of a helical wire spring are that it is flexible and therefore requires no articulations or joints, and that it is accurately adjustable for regulating the tension of the cord without requiring any special contrivance therefor.

The foregoing description has been made

with reference to our device as adapted for one common variety of deformity; but obviously our device is susceptible of divers changes suitable for this deformity or to meet
5 other cases without departing from our invention, and therefore we do not wish to be restricted to the construction shown. For instance, an ordinary spiral or barrel spring may be used to regulate the tension on the
10 cord instead of a torsion-spring.

What we claim is—

1. An orthopedic appliance comprising a shoe, a supporting-frame projecting upwardly and laterally from the heel thereof, a cord fastened at one end to the fore part of the shoe,
15 and means mounted on said supporting-frame for regulating the tension of said cord, substantially as and for the purpose set forth.

2. An orthopedic appliance comprising a shoe having a drum-support thereto fastened at the heel, a drum mounted on said support, a cord fastened at one end to the fore part of the shoe and at the other end to said drum,
20 and means for winding said drum and thereby regulating the tension on said cord, said drum being located above and aside from the sole of the shoe, substantially as and for the purpose set forth.

3. An orthopedic appliance comprising a shoe, a drum mounted on a support secured at the heel of the shoe, a cord attached to said drum and to the fore part of the shoe,
30 and a spring tending to wind said drum, substantially as and for the purpose set forth.

4. An orthopedic appliance comprising a shoe, a vertically-arranged drum mounted on a support fastened thereto at the heel, a cord attached to said drum and to the fore part of the shoe respectively, and means tending to wind said drum, substantially as and for the
40 purpose set forth.

5. An orthopedic appliance comprising a shoe, a vertically-arranged drum mounted on a support fastened at the heel, a cord attached to said drum and to the fore part of the shoe, and a helical spring secured at its lower end to said drum and at its upper end to a band adapted to be fastened to the patient's limb, substantially as and for the purpose set forth.
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6. An orthopedic appliance comprising a shoe, a vertically-arranged drum mounted on a support fastened at the heel, a cord attached to said drum and to the fore part of the shoe, a helical spring secured at its lower end to said drum and at its upper end to a band adapted to be fastened to the patient's limb, and a jointed upright bar secured at the heel on the side opposite the drum-support, and having a band adapted to encircle
55 the patient's limb, substantially as and for the purpose set forth.
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Witnesses:

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