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A. D. SCULLY

1,581,815

MECHANICAL TOE MOVEMENT DEVICE FOR ARTIFICIAL LIMBS

Filed July 8, 1925

Fig. 1

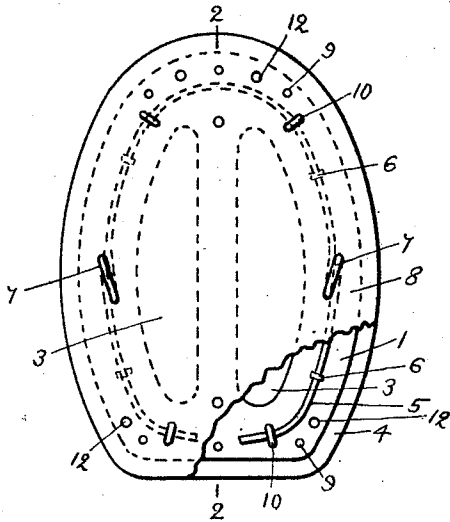


Fig. 2

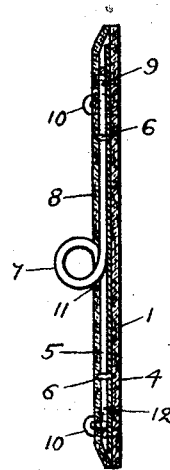
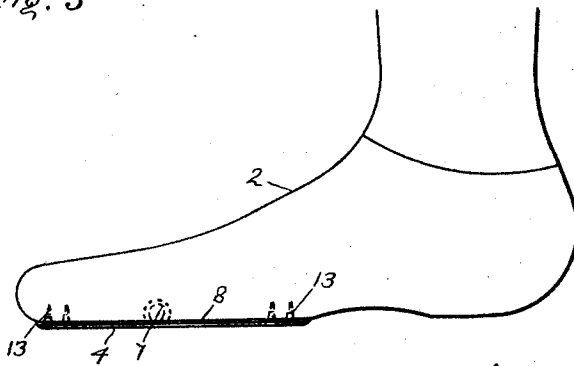


Fig. 3



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MECHANICAL TOE-MOVEMENT DEVICE FOR ARTIFICIAL LIMBS.

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To all whom it may concern:

Be it known that I, ALEXANDER D. SCULLY, citizen of the United States, and resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Mechanical Toe-Movement Devices for Artificial Limbs, of which the following is a specification.

My invention relates to mechanical toe movement devices for artificial limbs and has a particular reference to flexible and resilient sole plates for artificial feet.

The object of my invention is to provide a flexible sole plate so as to allow a free bending of the toes of an artificial foot, for instance, during walking action, and, at the same time, to have this sole plate very resilient so as to bring the toes back to their normal position immediately upon removal of the weight of the body from the artificial foot.

In ordinary artificial feet the sole is usually made flexible in order to imitate the natural bending of a human foot, but these ordinary artificial feet usually lack proper resiliency, and after having been used for some time, they become permanently bent, thereby acquiring an awkward and unnatural shape.

In my device I provide a plate of a spring steel reinforced with a coiled steel wire of a sufficient stiffness and resiliency to insure the permanency of the shape of the artificial foot.

My invention is more fully described in the accompanying specification and drawing in which—

Fig. 1 is a plan view of my device, Fig. 2 is a sectional elevation of same, and Fig. 3 is a view showing my plate attached to the sole of an artificial foot.

My device consists of a plate 1 made of a spring steel, hardened and properly tempered. It is cut to conform to the bottom surface of an artificial foot 2 and is provided with apertures 3 extending longitudinally on both sides. The object of these apertures is partly to increase the flexibility of the plate, and partly to provide facilities for attaching the plate to the bottom of the artificial foot.

The plate 1, as I have found from actual practice, gives best results when it is made of steel about $\frac{1}{4}$ in. thick. It can be made, however, of any suitable resilient metal, such

as hard bronze, aluminum, etc. The resilient plate 1 is placed on a leather plate 4 which forms a wear resisting surface and is placed at the bottom of the sole of an artificial foot 2.

This plate may be made of any suitable material, such as an artificial leather, rubber, fibre, etc.

A wire spring 5 is attached to the plate on its upper surface by means of clips or hooks 6. A coil or loop 7 is provided at both sides of the wire spring 5 in order to increase its flexibility.

The wire 5 is given an oval shape to conform with the shape of the plate 1. The ends may be left open, as shown, or they may be joined together.

A second leather plate 8 is placed on top of the plates 1 and 4, and all three plates are joined together by means of rivets 9 and clips 10. The loops 7 extend outside, the plate 8 being provided with corresponding slots 11 for them.

Additional holes 12 are provided in plates for screws 13 with which my sole plate is attached to the bottom surface of an artificial foot 2. Suitable depressions are provided in the artificial foot for the loops 7.

In addition to the screws 13 the plates may be sewed to the sole of the artificial foot by means of ordinary threads, passing them through holes in the plates and through the leather plates in the apertures 3.

With the construction shown the combined resiliency of the plate 1 and of the wire 5 is such, that the toe of the foot 2 is always maintained in a proper shape, being bent only when the whole weight of one's body is placed on the toe during walking.

This plate can be used to advantage with the foot made of felt, rubber or similar flexible material, or if it is made of wood or aluminum and is provided with hinges.

I claim as my invention:

1. In a mechanical toe movement device, the combination with a flexible metal plate, a wire spring attached to said plate, a plurality of loops formed on said wire, wear resisting plates attached to said metal plate, and means to attach said plates to the bottom surface of an artificial foot.

2. In a mechanical toe movement device, the combination with a flexible resilient metal plate, a wire spring attached to said plate, a plurality of loops formed on said wire, wear resisting plates attached to said

metal plate, said metal plate being provided with a plurality of apertures, and means to attach said plates to the bottom surface of an artificial foot.

- 5 3. In a mechanical toe movement device for artificial limbs, the combination with a flexible resilient metal plate, flexible wear resisting plates attached to said metal plate around its circumference, means to attach

said metal plate with said wear resisting 10 plates to the sole of an artificial foot, and means to increase the resiliency of said metal plate.

Signed at New York, in the county of New York and State of New York, June 15 A. D. 1925.

ALEXANDER D. SCULLY.