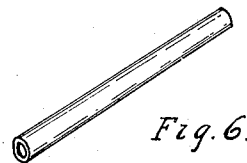
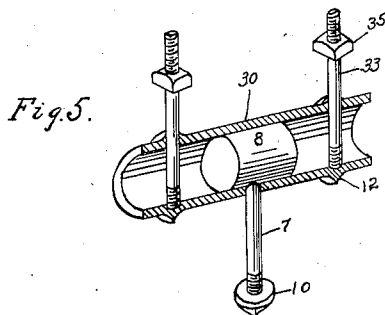
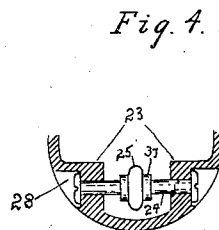
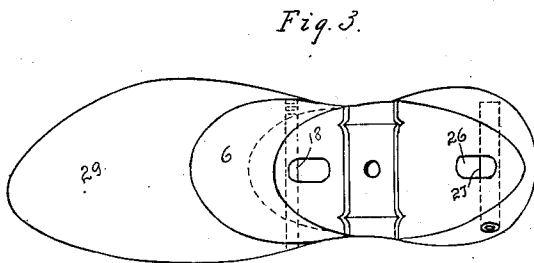
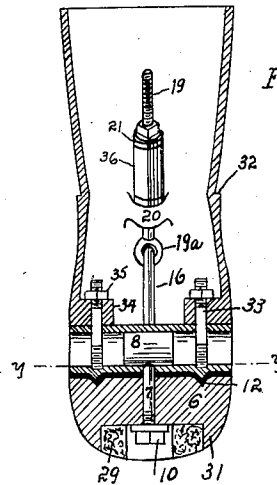
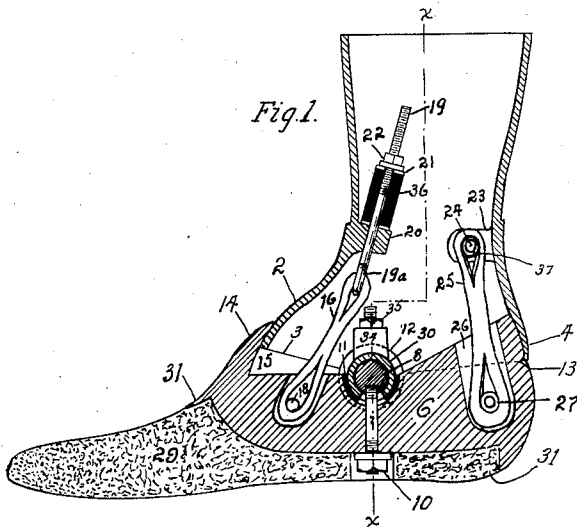


No. 810,180.

PATENTED JAN. 16, 1906.

H. C. WINTERMUTE.
ARTIFICIAL LIMB.

APPLICATION FILED MAY 2, 1905.



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ARTIFICIAL LIMB.

No. 810,180.

Specification of Letters Patent.

Patented Jan. 16, 1906.

Application filed May 2, 1905. Serial No. 258,455.

To all whom it may concern:

Be it known that I, HARRIS C. WINTERMUTE, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Artificial Limbs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My present invention relates to artificial limbs, and more particularly to an ankle for use on said limbs.

It is the object of my invention to provide a hollow ankle which is light and serviceable and will comprise the improved details of structure which will presently be described and pointed out in the claims, reference being had to the accompanying drawings; forming part of this specification, in which like reference-numerals refer to like parts throughout the several views, and in which—

Figure 1 is a side elevation, in central vertical section, of a foot and ankle constructed according to my invention. Fig. 2 is a sectional end view on the line $x x$, Fig. 1. Fig. 3 is a sectional plan view on the line $y y$, Fig. 2. Fig. 4 is a detail view of a portion of the ankle, showing the means for carrying the heel-cord. Fig. 5 is a detail view of the ankle-joint. Fig. 6 is a detail of the pin anchoring the lower end of the heel-cord.

Referring more in detail to the parts, 1 is the shell of my improved ankle, which is composed of a light strong material, preferably aluminium. The front lower portion 2 of said shell is curved forward and downwardly to conform to the crown of a foot and has an angling lower surface 3 extending backwardly and downwardly at an angle to a point above the instep, the rear lower portion 4 of the shell being curved to conform to the shape of the upper portion of the heel with its lower surface extending forwardly on substantially a horizontal line to meet the front lower surface 3. At the point of intersection of surfaces 3 and 4 is a transverse groove in each side of the shell in which is secured the upper portion of the ankle-joint, comprising a drum 30, the lower portion of which fits within a groove in the foot 6 and is adapted

for limited rotative movement therein, and a hanger 7, depending from a spool 8, fitting within drum 30 and extending downwardly through a circumferential slot 9 in said drum 30 and through the foot portion 6, to which it is secured by nut 10. Spool 8 fits snugly within the drum, but is free to move therein as the ankle moves backward and forward, as will be presently described. Drum 30 is rigidly secured to the ankle by means of bolts 33, which project through inwardly-projecting brackets 34 on the sides of the ankle and are secured thereto by nuts 35, the lower ends of the bolts projecting through and being secured in suitable perforations in drum 30. If so desired, the groove in foot 6 may be provided with a suitable bushing 11 and drum 30 with circumferential flanges 12, the latter tending to anchor said drum against lateral displacement. The top of foot 6 extends upwardly at the back from drum 30 and is adapted to fit within the heel portion of the ankle, the lower end of said ankle resting on a shoulder 13 when the leg is straight, but so conforming to the shape of the foot that as a step is taken the ankle will have a telescoping movement thereon. The top of foot 6 extends practically on a horizontal line forward of the joint and has a lip 14, extending upwardly and inwardly over a portion of the ankle, forming a socket 15, in which the front of the ankle may move.

16 is a toe-cord anchored in a pocket in the forward portion of foot 6 by a screw 18, which extends transversely through said foot and through a loop in the lower end of said cord. At its upper end cord 16 is secured in a loop 19^a in a threaded pin 19, which extends upwardly through a perforation in a bracket 20, which extends into the hollow ankle from the front.

Above bracket 20 and surrounding pin 19 are felt washers 21. 36 is a rubber spring separating washers 21, and above spring 36 is the nut 22, which holds pin 19 in position. At the rear and extending into the ankle from both sides is a pair of brackets 23, through which extends a pin 24, supporting the heel-cord 25, which extends downwardly into a pocket 26 in the heel of the foot 6 and is there anchored by the hollow pin 27, which extends through said heel and through a loop in the lower end of said cord. 37 is a leather sleeve on pin 24 on which cord 23 rests.

In order to provide a smooth surface when

the ankle is covered, I provide pockets 28 in said ankle adjacent to the brackets 23, in which the heads of the pins 24 are sunk.

In order that the foot may be as light as possible and to give the desired resiliency, I provide a tread 29, of felt or like material, which fits under a flange 31, extending around the lower edge of the foot and is suitably secured in the core in the bottom of said foot formed by said flange. 32 is a shoulder extending around the ankle near the brackets 23 and against which the covering of the upper portion of the leg abuts.

In the use of my device the parts are assembled as described and suitably connected with the upper portion of the limb, the rocking movement of the foot and ankle being limited by the nut on pin 19.

As the wearer takes a step forward with the natural limb his weight is on the artificial limb, the toe of the artificial foot being slightly raised, owing to the adjustment of the toe-cord. As the artificial limb is advanced to take a step the toe is held in this position until the heel strikes the ground and the weight is thrown thereon, when the toe is gradually rocked down in the natural way by the toe-cord drawing against the tension of the rubber spring.

By providing a felt tread for the foot a further resiliency is given to the step as the artificial limb is lifted from the ground to take another forward step. By constructing the ankle-shell of aluminium, with the inwardly-projecting brackets of only sufficient thickness to sustain the strain that is put on them, any excessive weight is obviated without sacrificing the strength of the limb.

By making the pin 27 hollow the weight is further reduced, and the felt tread not only reduces the weight, but gives the desired resiliency and natural motion to the foot, which is ordinarily accomplished by a mechanical toe-joint.

By having a series of sleeves 37 of varying

thicknesses the raising and lowering of the heel-cord is easily accomplished to adjust said cord, a thick sleeve being used to shorten the cord and a thinner one to lengthen it.

Having thus fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a device of the class described, a hollow ankle, a suitable foot carrying an ankle-joint, lugs 34 integral with and projecting into said ankle, and means carried by said lugs for supporting said ankle-joint.

2. In a device of the class described, a hollow ankle and suitable foot, a pair of lugs integral with and projecting into said ankle at opposite sides thereof, a pin carried by said lugs, and a heel-cord carried by said pin and connected with said foot.

3. In a device of the class described, in combination with a hollow ankle, a foot portion pivotally connected with said ankle, a pair of brackets projecting from opposite sides from the rear of said ankle, a pin mounted in said brackets, a sleeve 37 on said pin, and a heel-cord supported on the sleeve on said pin, substantially as and for the purpose set forth.

4. In a device of the class described, in combination with a suitable foot, a hollow ankle pivotally connected with said foot, a pair of brackets 23 projecting inwardly from the rear of said ankle, a pin extending through said brackets having a head at one end and a threaded pocket in the other end, a screw adapted to fit within said pocket, the heads of said pin and said screw being countersunk in said ankle, and a heel-cord carried by said pin and anchored in the heel of said foot.

In testimony whereof I affix my signature in presence of two witnesses.

HARRIS C. WINTERMUTE.

Witnesses:

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A. M. MAXWELL.