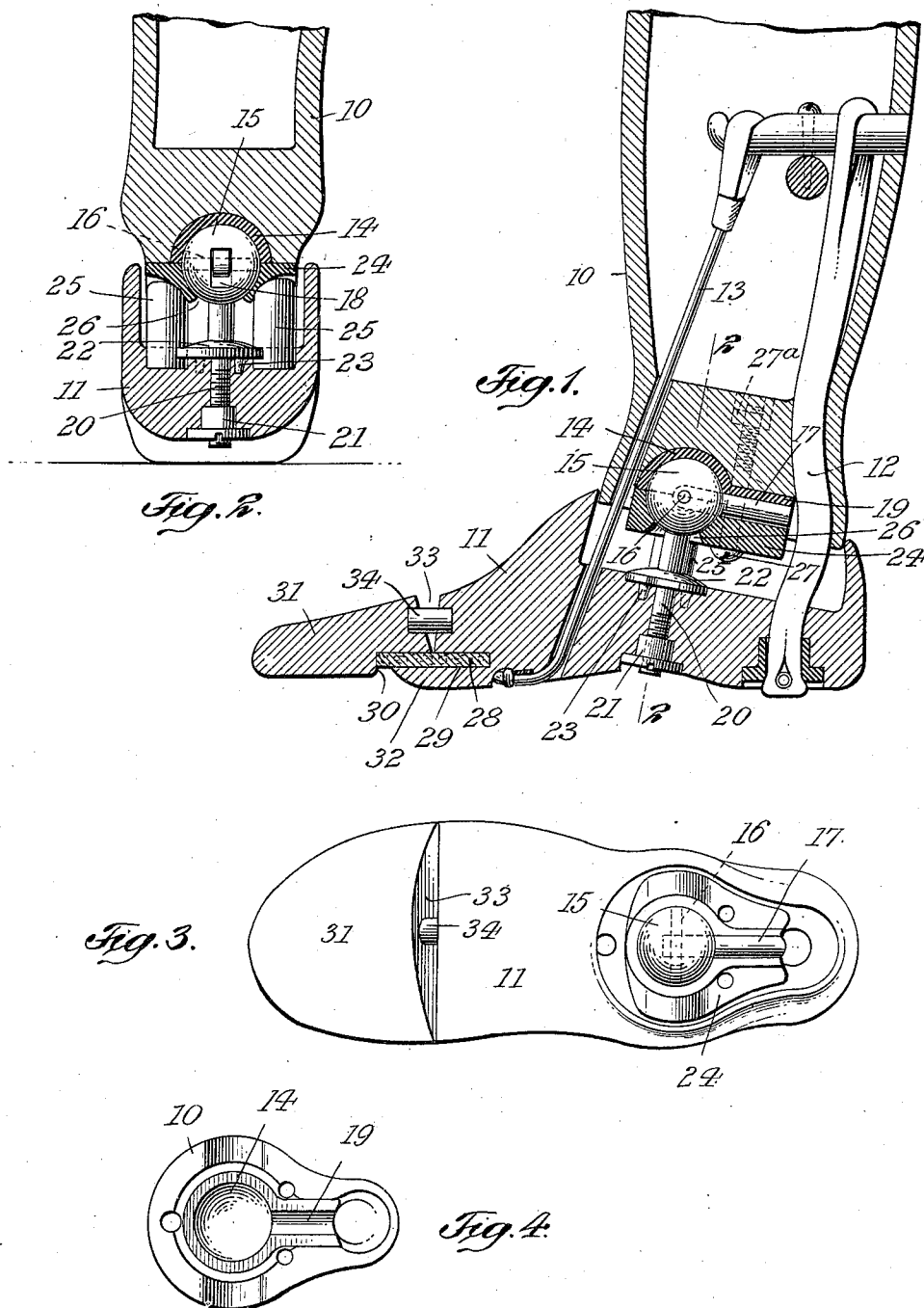


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ARTIFICIAL LEG.  
APPLICATION FILED MAY 8, 1911.

1,023,247.

Patented Apr. 16, 1912.



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# UNITED STATES PATENT OFFICE.

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## ARTIFICIAL LEG.

1,023,247.

Specification of Letters Patent.

Patented Apr. 16 1912.

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*To all whom it may concern:*

Be it known that I, CHANCY A. FREES, a citizen of the United States, residing at New York city, county and State of New York, have invented a new and Improved Artificial Leg, of which the following is a specification.

This invention relates to an artificial leg and more particularly to an improved construction of the ankle joint, which combines great freedom of movement with a minimum amount of friction. Briefly stated the ankle joint is formed of a ball and socket, the ball member of which is anchored in a novel manner to the foot, so that while the leg is free to rock universally or in all directions upon the ball, the latter cannot rotate to assume an improper angle to the foot.

In the accompanying drawing: Figure 1 is a longitudinal section partly in side view of an artificial leg embodying my invention; Fig. 2 a section on line 2—2, Fig. 1; Fig. 3 a plan of the foot, and Fig. 4 a bottom view of the leg.

The lower leg proper 10 is yieldingly connected to the foot 11, by the heel cord 12 and foot spring 13 as usual. Within the lower end of leg 10 is formed a socket 14 adapted for the reception of a lower cooperating ball 15. This ball is so anchored to the leg as well as to the foot, that while permitting a free swaying movement any objectionable rotating deflection of the foot is prevented. In order to effect this result, there is pivoted to the center of ball 15, an arm 17 by a diametrically extending pin 16. This arm is movable within a slot 18 of the ball, so that there is ample play between ball and arm within one zone of the former. The arm is of a length to extend outwardly beyond the ball, and its protruding end is rounded and accommodated within a suitable bearing of the leg shown to consist of a trough-shaped gutter 19, but this bearing may be differently formed if desired. It will thus be seen that the play of arm 17 within slot 18 permits a rocking movement of the leg upon the ball anteriorly and posteriorly, while a rocking or lateral movement in the other direction is permitted by the turning of the rounded end of arm 17 in its bearing 19. During this universal movement however the leg is locked to the ball against rotation owing to

the engagement of arm 17 with its bearing 19. In order to also lock ball 15 to foot 11, there is securely tapped into the ball, a screw bolt 20, passing loosely through a corresponding perforation of the foot, and carrying at its lower end a nut 21, by which the bolt is secured to the foot. Bolt 20 carries a fixed collar 22 which is provided with prongs 23 or other suitable means, by which the collar and consequently bolt 20 is rigidly secured to the foot. Thus as the bolt cannot turn in the foot, and as the ball cannot turn in the leg, any rotating deflection of the foot relatively to the leg is prevented, while a free or universal rocking movement of the leg on the foot can readily take place.

Below ball 15 there is arranged a lower socketed plate 24 resting on cushions 25 which control the lateral movement of the foot, said plate being apertured as at 26 for the passage of bolt 20. Plate 24 is secured to leg 10 by screws 27 engaging nuts 27<sup>a</sup> and adapted to be tightened up from time to time to compensate for wear.

It will be seen that by the construction described, a very desirable ball and socket ankle connection is formed which permits great freedom of natural movement, minimizes friction and prevents rotative deflection of the foot.

The toe joint of the foot is formed by a pliable leather strip 28, set into a groove 29 of the foot and extending into a recess 30 of the toe 31. The foot is provided with a lower flange 32 that extends forwardly beyond the slot 33 formed between foot and toe and containing a rubber spring 34. This flange thus partly underlies that section of leather strip 28 which is attached to the toe, and where the toe is pivoted to the foot and consequently prevents any extra strain of the latter, while permitting a free normal movement at the joint.

I claim:

1. An artificial leg provided with a leg portion, a foot, a socket arranged in proximity to the ankle joint between leg and foot, a slotted ball engaging said socket, an arm pivoted within the ball and extending outwardly through the slot thereof, and a bearing for the protruding end of said arm.

2. An artificial leg provided with a leg portion, a foot, a socket on the leg portion, a ball engaging the socket, means for non-rotatively securing the ball to the leg por-

tion, a bolt secured to the ball, a collar fast on the bolt, and means for locking the collar to the foot.

3. An artificial leg provided with a leg  
5 portion, a foot, a socket on the leg portion, a slotted ball engaging the socket, an arm pivoted within the ball, a bearing on the leg portion for said arm, a bolt depending from the ball, a collar fast on the bolt, means for  
10 locking the collar to the foot, and a nut carried by the bolt.

4. An artificial leg provided with a leg  
portion, a foot, an upper socket formed on the leg portion, a slotted ball engaging said  
15 socket, an arm pivoted within the ball, a bearing on the leg portion for said arm, a lower perforated socket beneath the ball, a bolt secured to the ball and passing through

said lower socket, means for securing the lower socket to the leg, and means for locking the bolt to the foot. 20

5. An artificial leg provided with a grooved foot having a lower forwardly extending flange, a recessed toe, a flexible strip that is fitted within the foot-groove, and 25 the toe-recess, and a spring within the joint between foot and toe, the lower flange of the foot extending across the toe joint and beneath the strip forwardly of said joint.

In witness whereof I have hereunto signed  
my name in the presence of two subscribing  
witnesses. 30

CHANCY A. FREES.

Witnesses:

ARTHUR E. ZUMPE,  
KATHERYNE KOCH.