(No Model.)

J. FURRER.

ARTIFICIAL LEG.

No. 592,542. Patented Oct. 26, 1897.

FIG. 1.

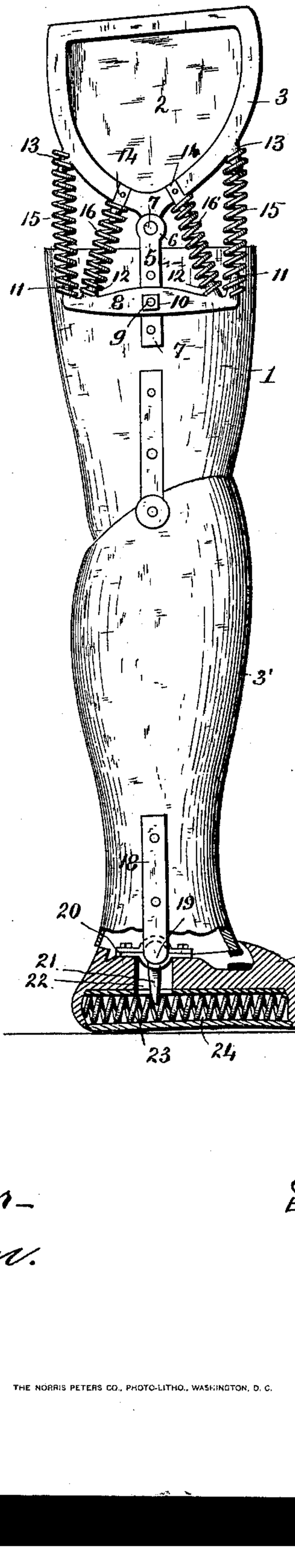
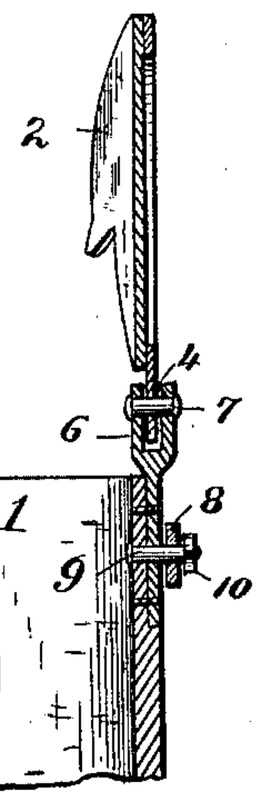


FIG. 2.



ATTEST.

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JOSEPH FURRER, OF EAST TOLEDO, OHIO.

ARTIFICIAL LEG.

SPECIFICATION forming part of Letters Patent No. 592,542, dated October 26, 1897.

Application filed April 13, 1897. Serial No. 631,983. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH FURRER, a citizen of the United States, residing at East Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Artificial Legs; 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.

This invention relates to artificial legs, and has for its object to produce an improved leg in which the movement at the knee-joint will be free and natural and the lower portion of the leg returned to its normal position whenever the flexure of the leg is received.

To these ends my invention consists in the features and in the combination, arrangement, and construction of parts hereinafter described, and specifically pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 represents a side elevation of a portion of an artificial leg, illustrating the improved knee-joint; and Fig. 2 represents a vertical central section thereof.

Referring to the drawings, the numeral 1 indicates the middle member of the artificial leg, and 2 a portion of a leather socket in which the stump of the upper member of the leg is adapted to be fitted. To the socket 2 is rigidly secured a metallic frame 3, having a central downwardly-projecting eye 4. To the upper member 3 is firmly riveted a vertical metallic strap 5, terminating at its upper end in two coincident eyes 6, between which is fitted the eye 4 of the frame 3, said eyes being pivotally connected to each other by a pivot-pin 7.

The numeral 8 indicates a cross-arm which is pivotally attached between its ends to the lower portion of the strap and to the middle member of the leg by a bolt 9, over the outer threaded end of which is tapped a nut 10. The cross-arm at its opposite ends is provided with upwardly-projecting lugs 11 and 12, the lugs at each end being in close proximity and slightly diverging. Similar lugs 13 and 14 project downwardly from the frame 3, but each of the pair of lugs 13 and 14 are arranged somewhat distant from one another. Coiled springs 15 and 16 are arranged over the lugs 11, 12, 13, and 14, and are placed thereon under sufficient compression to maintain the springs in place under all conditions.

In act of walking when the leg is bent at the knee the two members turn upon the pivot-pin 7, and as they turn relatively one to the other the cross-arm 8 oscillates from one side to the other of a vertical line passing through said pivotal point, and the springs are thus placed under increased tension, whereby when the leg is lifted from the ground said springs operate to oscillate the cross-arm back to its normal position and thus return the middle member of the leg to a vertical position. The springs 15 exert a vertical thrust on the ends of the cross-arm, and thus also exert a force to maintain the cross-arm in a horizontal position, while the springs 16, being oppositely inclined, tend to act more directly in restoring the cross-arm, and with it the middle member of the leg to its normal position.

The action of the springs is prompt, easy, and extremely natural and gives to the leg a motion closely approximating that of the human limb.

To the lower member 3′ of the leg is articulated the foot 17 in the following manner: Attached to the lower member 3′ are two straps 18, that embrace the opposite sides of the leg. The lower ends of the strap are united by a round cross-bar 19, that forms a journal, and the foot is pivotally mounted on said cross-bar by two metallic straps 20, that are attached to the upper portion of the foot by nails, bolts, or screws or other suitable fastenings. The foot thus has a rocking movement on the cross-bar. The lower strap is slotted, and through the slot projects a tang 21, which is formed integrally with the said cross-bar. The tang is free to oscillate in a recess 22, formed in the foot, and at its lower end engages two convolutions of a coiled spring 23, seated in a cylindrical recess 24, formed in the sole of the foot. The operation of this part of the leg is as follows:

In walking the middle member of the leg

and foot have a rocking movement relative one to the other on the cross-bar, and the tang alternately compresses the coiled spring toward the toe and heel, but as the foot is lifted from the ground the tension of the spring will exert an equal force in both directions and return the foot to its normal position.

Having described my invention, what I claim is—

1. In an artificial leg, the combination with a frame attached to the upper member of the leg and pivotally attached to the middle member, of a cross-arm pivotally attached between its ends to said middle member, and springs arranged between the opposite ends of said cross-arm and frame, substantially as described.

2. In an artificial leg, the combination with the frame attached to the upper member of the leg and provided with downward-projecting lugs, of a metallic strap fixed to the middle member and pivotally connected to said frame, a cross-arm pivoted between its ends to said middle member and provided with upwardly-projecting lugs at its opposite ends, and coiled springs fitted at their opposite ends over the said lugs on the frame and cross-arm, substantially as described.

3. The combination with an artificial leg of an artificial foot articulated thereto and having a rocking motion thereon, a coiled spring arranged in a longitudinal recess in the sole of the foot, and a tang fixed to the leg and projecting down between the convolutions of the spring, substantially as described and for the purpose specified.

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

JOSEPH FURRER.

Witnesses:
GOTTLIEB BAUMGAERTNER,
FORD SCHEETS.