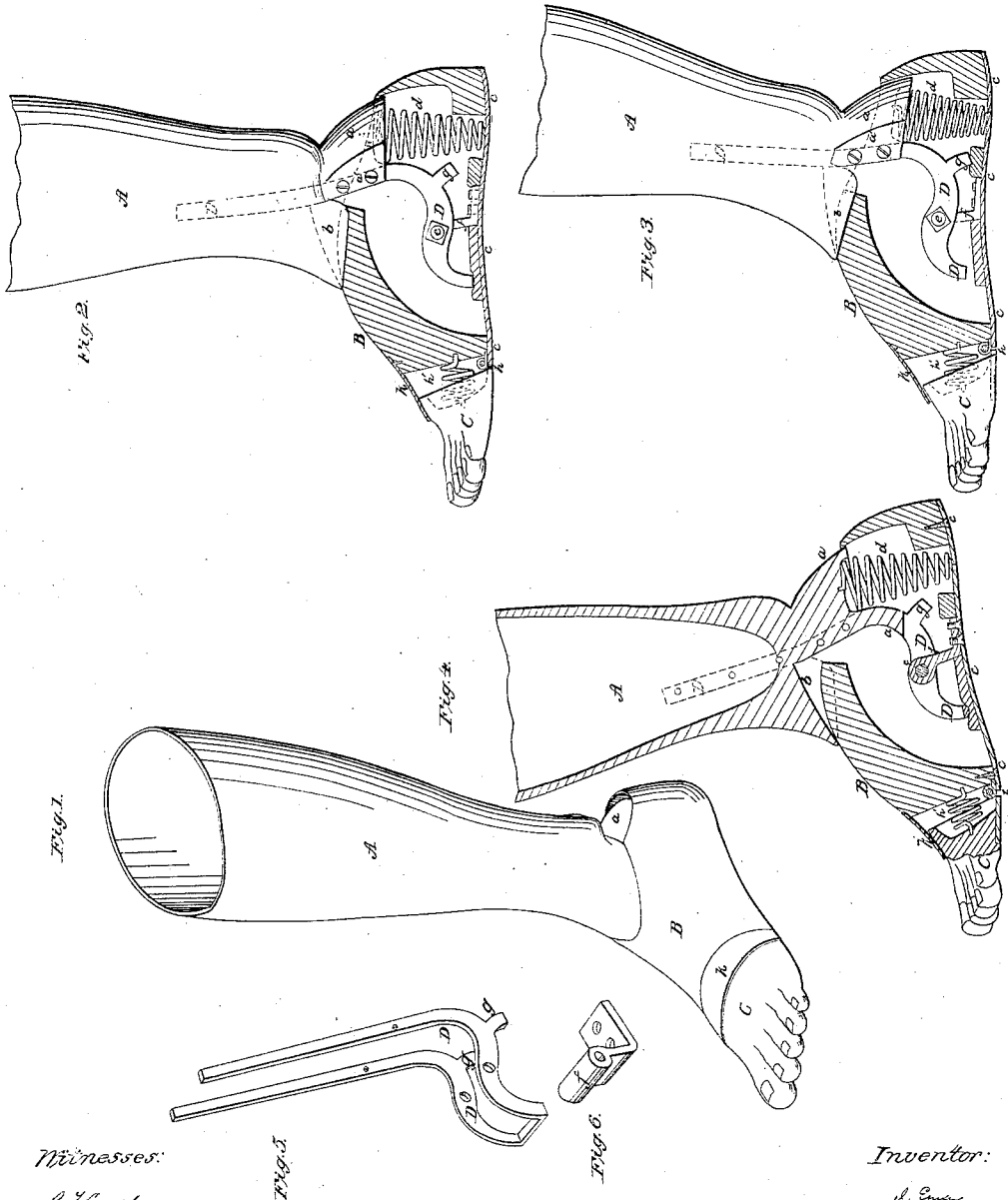


*J. Emery,  
Artificial Leg,*

*No 65,187,*

*Patented May 28, 1867.*



*Witnesses:  
R. J. Campbell  
G. W. Schuyler*

*Inventor:  
J. Emery  
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# United States Patent Office.

JONATHAN EMERY, OF CEDAR FALLS, IOWA.

Letters Patent No. 65,187, dated May 28, 1867.

## IMPROVEMENT IN ARTIFICIAL LEGS.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, JONATHAN EMERY, of Cedar Falls, in the county of Black Hawk, and State of Iowa, have invented a new and improved Artificial Leg; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of the leg complete.

Figure 2 is a sectional view, showing the interior of the foot when the leg is in an upright position.

Figure 3 is a similar view of the same parts, showing the leg inclined backward.

Figure 4 shows the same parts when the leg is inclined forward.

Figures 5 and 6 are perspective views of the devices by which the leg is connected to the foot.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists mainly in connecting the lower-leg section to the foot by means of a curved frame, which projects forward from its point of connection with the leg, and is pivoted to the sole of the foot at a point which is in, or nearly in, the centre of the arch of the foot, said frame being so constructed that, in the act of walking, it will afford bearings upon the foot forward and in rear of its pivot connection therewith, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

The three sections A, B, and C are represented in the drawings as made of wood; but they may be made of any other suitable material which will afford the requisite strength and lightness. The lower-leg section is shaped to resemble, as nearly as possible, the natural leg. It is constructed with a curved heel extension, *a*, and also with a concave ankle portion, *b*. The section B is a hollow piece, which, in conjunction with the toe section C, resembles the natural foot in shape. This section has a steel plate, *c*, neatly let into its sole, and secured firmly in place by means of screws, which are applied near its ends, as shown in fig. 4. This sole-plate is arched, so as to conform to the shape of the bottom of the section B, and it extends from end to end of this section. The instep is curved externally so as to allow the concave ankle portion *b* of the leg to fit neatly over it, and to move freely. The heel projection *a* of the leg enters an opening which is made through the top and rear part of the foot section B, as shown in figs. 2, 3, and 4, and rests upon a spiral spring, *d*, which is interposed between its lower end and the steel sole-plate *c*. The lower-leg section A is connected to the foot section by means of a transverse pivot, *e*, which passes through the side-bars of a frame, D, and through an eye-piece, *f*, which is secured rigidly to the sole-plate *c* at a point which is in, or nearly in, the centre of the arch of the foot, as shown in the drawings. The frame D consists of two side-bars, which are rigidly secured to the sides of the section A, and projected forward from the lower end of the heel extension *a* in the form of the letter S. The front ends of the side-bars D curve downward, so as to press upon a cushion on the sole-plate *c*, when the parts are in the positions indicated in figs. 2 and 4, thus affording a bearing for the leg upon the sole-plate forward of the pivot connection *e*. In rear of the pivot *e* tongues *g g* are formed on the lower edges of the side-bars D, which serve as stops for preventing the front part of the foot from dropping too far. If desirable, an elastic cushion may be placed upon the sole-plate *c*, beneath the stops *g*, so as to prevent shocks and noise, which would occur if these stops were brought suddenly in contact with the steel plate *c*. The heel-spring *d* will force the front part of the foot upward until it is arrested by the front ends of the side-bars D, when there is no pressure upon the foot. Said spring also affords an elastic bearing for the heel extension *a*. On each side of the heel extension *a* a metal plate, *a'*, is secured, which plates impinge upon metal plates that are secured to the inner sides of the foot section B, thus affording lateral support for the rear part of the foot, which will relieve the pin *e* from lateral strain. By this arrangement it will be seen that the bearing upon the foot, when standing upright, is at or near its centre; and when walking the weight is so distributed that, when the step commences, the weight first comes upon the heel, then upon the pivot *e*, and as the foot is about to be lifted the weight falls upon the forward part of the section B and section C. The toe section C is hinged, at *h*, to the steel plate *c*; and between this section and the front end of the section B a spring, *h'*, is interposed for keeping section C in the position represented in fig. 2, when there is no pressure upon it. The space between the two sections B and C is closed by a thin sheet-metal plate, *k*, which is secured to the section B, and extends over the section C, as

shown in the drawings. The steel plate *c*, which is let into, and secured at its extremities to the sole of the foot section, should be made of sufficient strength to sustain the weight of the person wearing the leg, and to afford an elastic bearing for the leg, so as to prevent unpleasant noise and shocks in walking. Instead of using wood-screws for securing the sole-plate *c* to its section B, I prefer to use bolts and nuts, as they will afford a much stronger fastening. The bearings through which the pin *e* passes may be made conical, so that, should they become loose from wear, they can be readily tightened by setting up the nut on the pin *e*.

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

1. The construction of the frame D D in the form shown in fig. 5 of the drawings, and so that it is applicable to the standard *f* on the steel sole-plate *c*, and will afford a bearing forward of, and in rear of the axis of motion of the leg A, and also serve as the means for connecting the leg to the foot, all in the manner herein described and shown.

2. The construction of the heel extension *a* and concave ankle portion *b* upon the leg A, in combination with the heel-spring *d*, frame D, and foot section B, substantially as described.

JONATHAN EMERY.

Witnesses:

S. H. PACKARD,

E. W. JEWELL.