

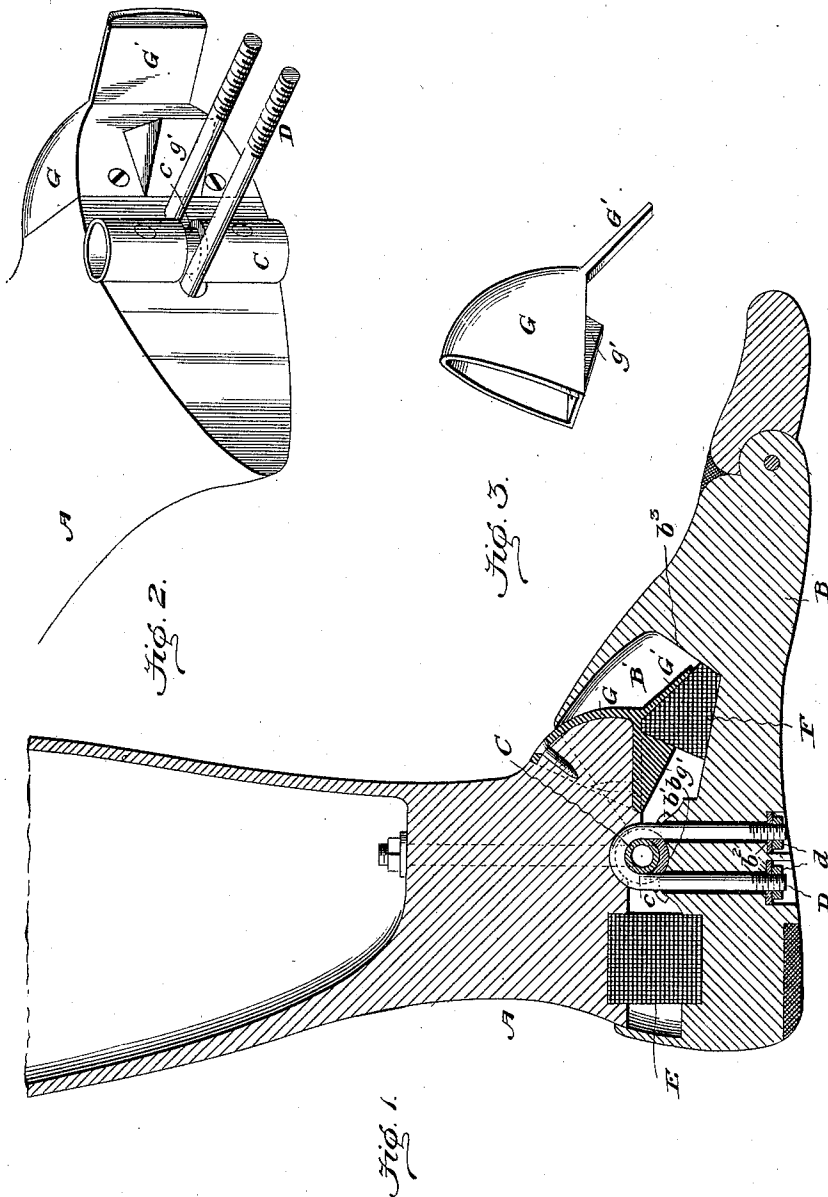
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Patented Jan. 9, 1900.

A. L. PETERS.  
ARTIFICIAL LEG.

(Application filed Oct. 26, 1899.)

(No Model.)



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## ARTIFICIAL LEG.

SPECIFICATION forming part of Letters Patent No. 640,941, dated January 9, 1900.

Application filed October 26, 1899. Serial No. 734,833. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR LOYD PETERS, a citizen of the United States, residing at Lynchburg, in the county of Campbell and State of Virginia, 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.

This invention relates to improvements in artificial legs, and particularly to the ankle-joint or connection between the leg and foot.

It has long been the aim in the manufacture of artificial legs to construct the ankle-joint so as to imitate the action of the natural foot. To this end the foot has been attached, by a pivot arranged transversely thereof, to the lower extremity of the leg at a point about midway between its front and rear margins, springs or buffers being arranged on each side of the pivot in order to maintain the parts yieldingly in a certain normal position with relation to each other. In some instances the spring or buffer forward of the pivot has been arranged at a greater distance therefrom than that at rear of said pivot, and to give needed strength a block of hard wood has been secured to and extends forward of the lower end of the leg-section proper to bear upon the forward spring or buffer located in the instep of the foot-section.

The object of my invention is to improve the construction and operation of devices of this character; and to this end the invention consists in certain novel features of construction and combinations of parts, the essential elements of which are recited in the appended claims and a preferred form of embodiment of which is illustrated in the accompanying drawings and specifically described herein-after.

In the accompanying drawings, which form part of this specification and in which similar letters of reference are used to denote similar parts, Figure 1 is a vertical sectional view through a leg and foot section embodying my improvement. Fig. 2 is a perspective view of the lower end of the leg-section with my improved instep attachment in position, and Fig. 3 is a detail perspective view of the instep attachment of the leg-section.

A indicates the lower part of the leg-section, which is usually constructed of willow or other light wood, and B the recessed foot-section, also usually constructed of willow. These parts may, within wide limits, be of any usual or preferred construction and are hinged together, preferably, by a hollow bolt or sleeve C, attached to the leg-section A about midway between its front and rear limits, and a threaded strap or staple D, straddling said sleeve centrally and passing down through the foot-section B, where the ends are secured by nuts *d d*. The hollow bolt or sleeve C is of large diameter relatively and is seated in a semicylindric recess or channel *b*, formed in the foot-section B, said recess having, preferably, a lining *b'*, of rawhide or other material, affording a good wearing friction-surface that may be renewed from time to time as it becomes worn or gritty from accumulation of dust or dirt incident to use.

The pivot-bolt C is preferably provided at the center with a groove *c* to afford a bearing and guide for the strap D, and the apertures *b<sup>2</sup> b<sup>2</sup>* of the foot, through which the legs of the strap pass, may be made sufficiently large to admit of the passage of any particles of metal worn from the bolt C or strap D, thus decreasing the liability of such particles becoming lodged upon the bearing-surface or lining *b'* of the pivot-joint and saving wear.

Interposed between the leg and foot sections, at opposite sides of the pivot-bolt C, are rubber buffers E and F, which serve to maintain the leg and foot sections normally in a certain position with relation to each other, but which yield, on pressure of the leg-section, either forward or back from the vertical. Owing to the greater leverage which it is possible to exert, by moving the leg toward the toe of the foot-section and also owing to the fact that the forward part of the foot must carry the weight of the wearer while the other leg is swung forward for another step, the forward or instep buffer F should be less yielding than the rear buffer E, and it is also desirable to locate this yielding action well forward of the ankle-pivot C and to make its action variable automatically to accommodate longer or shorter steps. To meet these various conditions, I provide the foot-section B with a chamber or recess *B'*, extending

well forward toward the toe and seat the forward buffer F in the forward end of said chamber or recess, as shown. The lower forward end of the leg-section is provided with a cap G, of metal, said cap having a forwardly-projecting tongue G', which extends nearly to the forward wall  $b^3$  of the chamber B'. The cap G is firmly secured to the lower leg-section by means of screws, as shown, or in any other preferred manner. This cap G preferably entirely incloses the forward end of the leg-section, (though this is not essential,) the latter being cut away to provide a flush joint between the cap and the leg section, as shown, and is constructed of thin steel, both for the sake of lightness and the resiliency of the tongue G'. The cap may be cast, forged, pressed, or struck up from blanks, as desired or found most expedient.

The cap G is, as stated, provided with a tongue G' and on its under side with a downwardly-extending lug or projection  $g'$ , the walls of the tongue and lug being so disposed as to leave a wedge-shaped space between them to receive the upper part of the buffer F, as shown.

The tongue G' is of such metal and so proportioned as to thickness with relation to the buffer F that when the latter has yielded or been compressed to nearly its full extent by the downward pressure of the tongue (upon forward movement of the leg-section on pivot C) the tongue will yield to a greater or less extent, thus increasing the forward range or limit of motion of the leg-section on its ankle-pivot. This is of great importance to the wearers of artificial legs, as such legs are usually tested and adjusted for a step of ordinary length and for use on a flat surface, such as a floor or city pavement. At times, however, the wearer will find it necessary or desirable to make a longer step than usual or encounter a road surface or pavement that is uneven, thus bringing unusual pressure on the toe of the foot and causing great discomfort unless provision is made for such contingencies.

Aside from the exceptional circumstances of use above referred to the additional yield afforded by the resilient tongue G' gives comfort to the wearer, and the employment of said tongue does not increase the cost of the leg.

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

1. In an artificial leg, the combination with a leg-section and foot-section, of a hollow bolt secured to the leg-section and seated in a curved bearing of the foot-section, and a connecting strap or staple passing centrally over said bolt and through apertures in the foot-section of such diameter as to leave a clear space between the walls thereof and the legs of the strap or staple.

2. In an artificial leg, the combination with a lower leg-section and a recessed foot-section pivoted together, of front and rear buffers, and a cap secured to the leg-section and having a lug and tongue to engage two surfaces of the forward buffer.

3. In an artificial leg, the combination with a lower leg-section and recessed foot-section pivoted together, of buffers at either side of said pivot, and a cap secured to the forward part of the leg-section and provided with a resilient tongue bearing on the forward buffer.

4. As a new article of manufacture, a cap for the forward lower end of an artificial leg-section, the same consisting of a part embracing said leg-section and a forwardly-projecting resilient tongue.

5. As a new article of manufacture, a cap for the forward lower end of an artificial leg-section, the same consisting of a part embracing said leg-section, a forwardly-projecting resilient tongue, and a downwardly-extending lug or projection the working face of which is arranged at an angle to said tongue.

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

ARTHUR LOYD PETERS.

Witnesses:

M. P. DAVIS,  
N. N. HOYT.