O. H. ERICKSON.

ARTIFICIAL LEG.

APPLICATION FILED DEC. 9, 1918.

1,302,336.

Patented Apr. 29, 1919.

Fig. 1

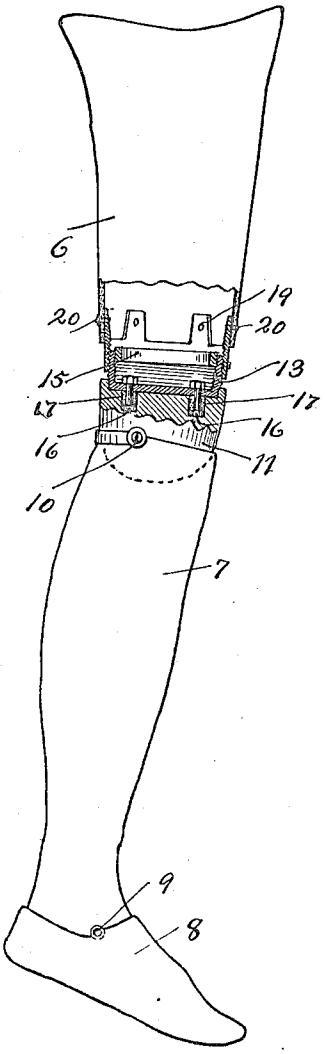


Fig. 2

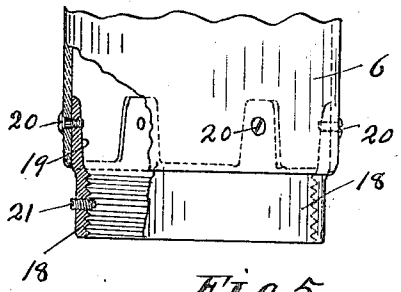


Fig 5

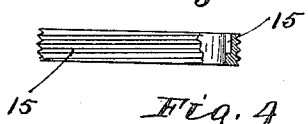


Fig. 4

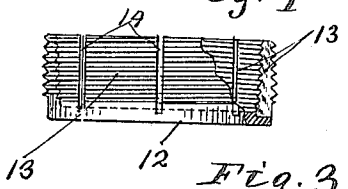
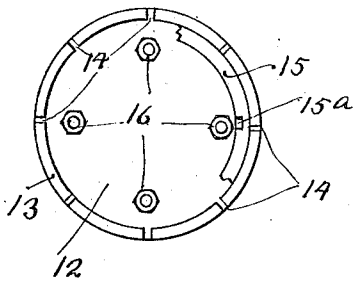


Fig. 3



Witnesses.
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ARTIFICIAL LEG.

1,302,336. Specification of Letters Patent. Patented Apr. 29, 1919.

Application filed December 9, 1918. Serial No. 265,849.

To all whom it may concern:

Be it known that I, OTTO H. ERICKSON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Artificial Legs; and I do hereby 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.

My present invention relates to artificial legs and is directed to a highly important improvement whereby the leg may be lengthened and shortened at will, and the foot set in the proper foot angle or turn. These two adjustments, so far as I am aware, have not hitherto been provided in an artificial leg.

The longitudinal adjustment is highly desirable for several reasons. In the first place, it is difficult matter to get the exact right length of leg with the proper fit of the leg to the leg stump, and in the second place, even when this adjustment is attained when the leg is made, the position of the stump in the leg will change as it is used, requiring re-adjustment of the leg. When the leg is longitudinally adjustable, no refitting of the leg to the stump is required because of any required additional length in the leg.

Moreover, it is a difficult matter always to attain or have the proper foot angle after the leg has been fitted to the stump, and moreover, the leg may, under wear, change its position somewhat on the stump. Hitherto, correction of this defect has been difficult, but by providing the leg with a swivel or axial pivot so that the foot may be rotated on the axis of the leg, and in respect to the leg socket, it is an easy matter always, at will, to set the foot at the proper foot angle.

The above noted two adjustments very greatly reduce the amount of work and difficulty thereof required to properly fit an artificial leg to a leg stump. Obviously, with this adjustment provided for, the leg socket can be fitted to the stump to the very best advantage and only with an approximate longitudinal and rotary adjustment of the leg, and after the fitting has been done, the said adjustments of the leg may be quickly and accurately made, and moreover, the leg may be re-adjusted at any time so that it will always have proper length and foot angle.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views. Referring to the drawings,

Figure 1 is a side elevation with some parts sectioned, illustrating my invention applied to an artificial leg designed for thigh or upper leg amputations;

Fig. 2 is a fragmentary view partly in elevation and partly in vertical section showing a portion of the thigh socket or upper leg section and its coupling sleeve;

Fig. 3 is a plan view of an expansible flanged cap applied to the lower leg section;

Fig. 4 is a side elevation of the parts shown in Fig. 3, some parts being broken away; and

Fig. 5 is an elevation of an expanding plug for the flange of the cap shown in detail in Figs. 3 and 4, some parts being sectioned.

The numerals 6, 7 and 8, respectively, indicate the thigh socket, the shank and the foot of the artificial leg. The foot is pivotally connected to the leg with the customary ankle joint pivot 9.

The leg illustrated, being of upper leg or thigh amputations, is provided with a knee joint pivot at 10, which pivotally connects the shank 7 to the shank head 11 which, as shown, is a solid wooden block rounded at that portion that projects downward into the shank. Rigidly secured to the top face of the head 11 is a metal cap 12 provided with an upturned flange 13 that is both internally and externally screw-threaded. The inner threads of the flange 13 are downwardly tapered but the outer threads thereof are intapered. Moreover, said flange 13 is provided with circumferentially spaced slits 14 that make the said flange expansible and contractible. A tapered externally threaded annular plug 15 is adapted to engage the tapered internal threads of the cap flange 13 to expand the same. Preferably, the plate of the cap 12 is secured to the head 11 by short nut-equipped bolts 16, the heads of which are set into the cap, and the nut-equipped ends of which project through perforations in said cap. To thus anchor the bolts 16 to the head 11, holes larger than the heads of the bolts are bored therein and these holes above the heads, are then closed by wooden bushings 17 applied

around the bodies of the bolts below the cap and secured to the head by glue, or otherwise.

The external threads of the expansible cap flange 13 are adapted to be screwed into an internally threaded sleeve 18 that is rigidly secured to the lower end of the thigh socket 6, the said sleeve, as shown, having upwardly projected ears 19 through which, and the lower end portion of the socket 6, screws 20 are applied with threaded engagement with said ears.

As is evident, when the expanding plug 15 is loosened by screws to ascend upward in the flange 13, the lower leg section may be rotated on the longitudinal axis of the leg and thus the length of the leg can be varied, and moreover, it also, of course, follows that the foot may be set for any desired foot angle. When the lower leg section and the foot are properly adjusted and the expanding plug 15 is screwed tight into the flange 13, the latter will be expanded and pressed into very tight frictional engagement with the threads of the sleeve 18, and thus the upper and lower leg sections will be secured in the desired adjustment stated. If desired, the set adjustment above noted may be further insured by one or more set screws 21 having screw-threads through said sleeve and adapted to impinge on the threads of the expansible flange 13 or to engage with one of the slits 14 thereof.

The so-called expanding plug 15 is preferably made angular in form for the sake of lightness and to facilitate turning thereof, it is shown as provided with internal notches 15^a for the application of a wrench of special design, not shown.

The above described construction, while very simple, and of comparatively small cost, greatly increases the efficiency of the artificial leg and accomplishes the several important features already noted. The metallic parts 12—13, 15 and 18—19 may be, and preferably are made of aluminum because of lightness of this material, but, of course, they may be made of any other suitable material.

What I claim is:

1. An artificial leg comprising leg sections having coöperating external and internal screw-threaded elements connecting the two leg sections for rotation on the major axis of the leg and to thereby vary the length of the leg and the foot angle.

2. An artificial leg comprising leg sections having coöperating external and internal screw-threaded elements connecting the two leg sections for rotation on the major axis of the leg to thereby vary the length of the leg and the foot angle, and means for locking the said threaded elements together to hold the leg sections in their relatively set adjustments.

3. An artificial leg having leg sections connected by a longitudinal and rotatively adjustable joint, said joint comprising an internally threaded sleeve on one of the leg sections, an expansible internally and externally threaded flange secured to the other leg section and having threaded engagement with the interior of said sleeve, and an expanding plug working with tapered threaded engagement within said expansible flange.

4. In an artificial leg, the combination with a shank and a thigh socket, of a shank head connected to the upper end of said shank by a pivot affording a knee joint, an internally threaded sleeve secured to the lower end of said thigh socket, a cap secured to the top of said shank head and having an expansible flange working with threaded engagement within said sleeve, and an expanding plug working with tapered threaded engagement within the flange of said cap.

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

OTTO H. ERICKSON.

Witnesses:

CLARA DEMAREST,

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."