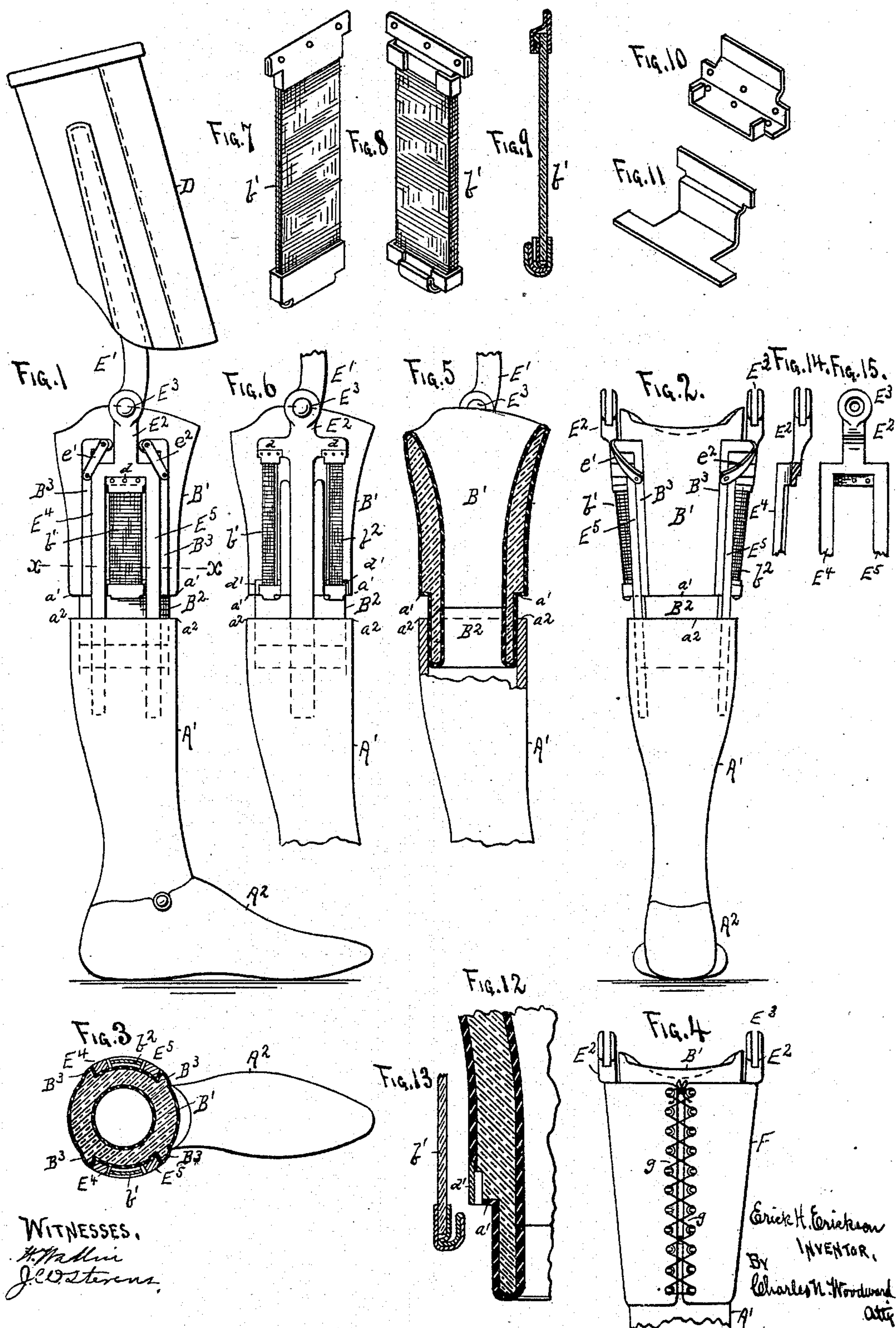


(No Model.)

E. H. ERICKSON.
ARTIFICIAL LIMB.

No. 573,266.

Patented Dec. 15, 1896.



UNITED STATES PATENT OFFICE.

ERICK H. ERICKSON, OF MINNEAPOLIS, MINNESOTA.

ARTIFICIAL LIMB.

SPECIFICATION forming part of Letters Patent No. 573,266, dated December 15, 1896.

Application filed August 8, 1896. Serial No. 602,132. (No model.)

To all whom it may concern:

Be it known that I, ERICK H. ERICKSON, a citizen of the United States, residing at the city of Minneapolis, in the county of Hennepin and State of Minnesota, have made certain new and useful Improvements in Artificial Limbs, of which the following is a specification.

This invention relates to artificial limbs; and it consists in the construction, combination, and arrangement of parts, as hereinafter shown and described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a side elevation, and Fig. 2 is a rear elevation, of an artificial limb embodying my invention. Fig. 3 is a cross-sectional view on the line $x x$ of Fig. 1. Fig. 4 is a rear elevation of the slip-socket and a section of the lower-limb portion with the inclosing sheath in place thereon. Fig. 5 is a sectional side elevation of the slip-socket and a section of the lower-limb portion. Fig. 6 is a side elevation illustrating a modification in the construction. Figs. 7 and 8 are perspective views, enlarged, from the outside and inside, respectively, of one of the elastic straps, illustrating the manner of connecting the end clamps and hooks; and Fig. 9 is a longitudinal sectional view of the same. Figs. 10 and 11 are perspective views, enlarged, of the metal clasps and hooks for the ends of the elastic straps, partially opened out to illustrate their construction. Fig. 12 is a sectional detail of a portion of the lower edge of the slip-socket; and Fig. 13 is a longitudinal sectional view of a portion of the lower end of one of the elastic straps and its hooked clamp, illustrating the manner of connecting the elastic strap to the slip-socket. Figs. 14 and 15 are details of the upper end of one of the lower side straps, illustrating the manner of securing the elastic-strap clasps thereto.

A' is the lower-limb section, and A^2 the foot-section, of an artificial limb.

B' is a socket fitted to the stump of the severed limb, and with its lower end reduced in size at B^2 and adapted to freely slide in the cavity in the lower-limb section A' , as shown in Fig. 5, and with a shoulder a' adapted to rest upon the top a^2 of the lower-limb section when the slip-socket is at its lowest point.

D is the thigh portion, adapted to be strapped

to the thigh of the wearer, and connected to the lower-limb section by the usual jointed straps $E' E^2$. The portion E^2 of the strap below the joint E^3 will preferably be divided into two parts $E^4 E^5$, as shown in Fig. 1, and fitting in perpendicular channels in opposite sides of the slip-socket B' , as shown in Figs. 1, 2, and 3, the projecting edges B^3 of these channels forming guides to the straps, so that while the slip-socket is free to move upward and downward it cannot move laterally or revolve upon the lower-limb section.

$b' b^2$ are elastic straps connected by their upper ends to the strap E^2 and by their lower ends to the slip-socket B' , so that the latter will be held normally in its upward position. In Figs. 1, 2, and 3 these elastic straps $b' b^2$ are placed between the forks $E^4 E^5$, which is the preferable arrangement; but they may be arranged as shown in Fig. 6 under some circumstances, if preferred. The upper ends of the elastic straps are provided with sheet-metal clasps, between whose lips the elastic webbing is secured, and the clasps connected to the straps E^2 by screws or rivets d , while the lower ends of the straps are likewise secured between the lips of sheet-metal clasps, and the clasps below the webbing bent into hooks adapted to catch beneath plates upon the slip-socket, so as to be readily attachable and detachable. The clasps are both formed substantially alike, differing only in the details necessary to enable the upper one to be connected by screws or rivets to the straps E^2 and the lower one to be hooked behind the plate d' .

In forming the clasps a plate of sheet metal is folded over upon itself and the end of the webbing inserted between the lips formed by the edges of the folded-over portions, and wings formed upon the ends of the sheet-metal plates folded over upon the two thicknesses of the metal and the webbing inclosed by them. The inclosing metal is then pressed into the webbing by a center punch, which firmly connects the metal to the webbing.

The upper clasps are attached to the straps E^2 by screws or rivets passed through the two parts of the plate where they are folded together, and the folded-over edge of the lower clasp bent into a hook to be inserted into the cavity behind the plate d , as before stated.

Artificial limbs are frequently subjected to

severe side strains, and the side straps E' E^2 E^4 E^5 being made as light as possible to avoid unnecessary weight may not always be strong enough to resist these side strains, but may
 5 be moved laterally out of the guides B^3 . To avoid any such mishap, I provide the small diagonal guards e' e^2 , which effectually prevent any lateral movement, while at the same time
 10 leaving the slip-socket free to move perpendicularly. By this simple arrangement the webbing is firmly secured without sewing or other laborious fastenings and can be readily replaced when worn out without detriment to the clasps or other parts.
 15 e' e^2 are small guard-straps attached to the slip-socket over the corners of the parts E^4 E^5 of the straps, to confine them more firmly in their position and prevent accidental displacement.
 20 In Fig. 4 is shown the slip-socket and the upper portion of the lower-limb section inclosed by a sheath or covering F , preferably of leather, and secured in place by lacings g at the rear, as shown. This is an important
 25 feature of my invention, as the sheath not only supports and protects the parts and prevents unnecessary lateral movement, but also protects the clothing of the wearer and prevents unnecessary friction.
 30 I claim a special advantage by arranging the slip-socket with the shoulder a' , as the downward movement is thereby limited in event of any sudden downward strain greater than the elastic straps can resist. The elastic
 35 straps are thereby protected from any abnormal strains which might otherwise break them.

Having thus described my invention, what I claim as new is—

40 1. In an artificial limb, the thigh portion and lower-limb portion united by jointed side

straps, a socket molded to the stump of the severed limb and slidable vertically between said side straps as guides and with the lower
 portion reduced and slidable in the upper 45 part of said lower-limb portion, and springs adapted to support said socket and keep it normally in its upper position, substantially as set forth.

2. In an artificial limb, the thigh portion 50 and lower-limb portion united by jointed side straps, a socket molded to the stump of the severed limb and slidable vertically in channels in the sides of said socket, and elastic straps supporting said socket from said 55 straps, and guard-plates attached to said socket and partially covering said straps, to prevent displacement, substantially as shown and described.

3. In an artificial limb, the thigh portion 60 and lower-limb portion united by jointed side straps, a socket molded to the stump of the severed limb and slidable vertically between said side straps, elastic straps supporting said socket from said side straps independ- 65 ently of said lower-limb section or thigh-section, and a sheath embracing said socket and straps to protect and support the parts, substantially as shown and described.

4. In an artificial limb, the thigh portion 70 and lower-limb portion united by jointed side straps, a socket molded to the stump of the severed limb and having channels in which the side straps are slidable vertically, sub- 75 stantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ERICK H. ERICKSON.

In presence of—

HATTIE E. WHITCOMB,
 C. N. WOODWARD.