(No Model.)

E. H. ERICKSSON.

ARTIFICIAL LEG.

No. 527,525. Patented Oct. 16, 1894.

Fig. 1

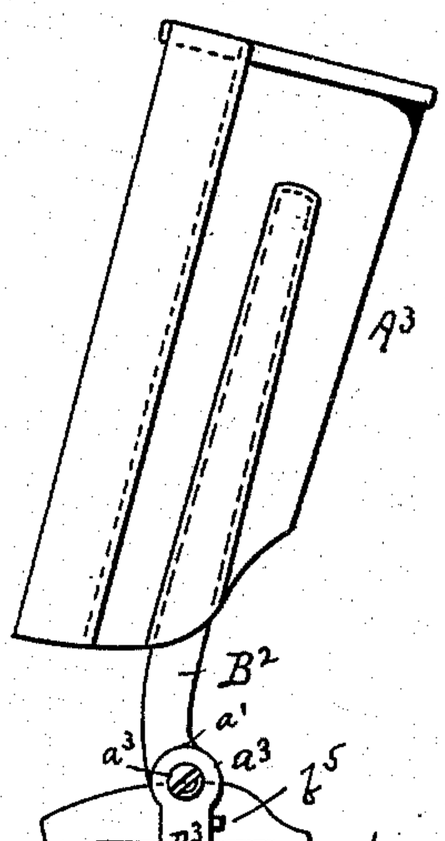


Fig. 2

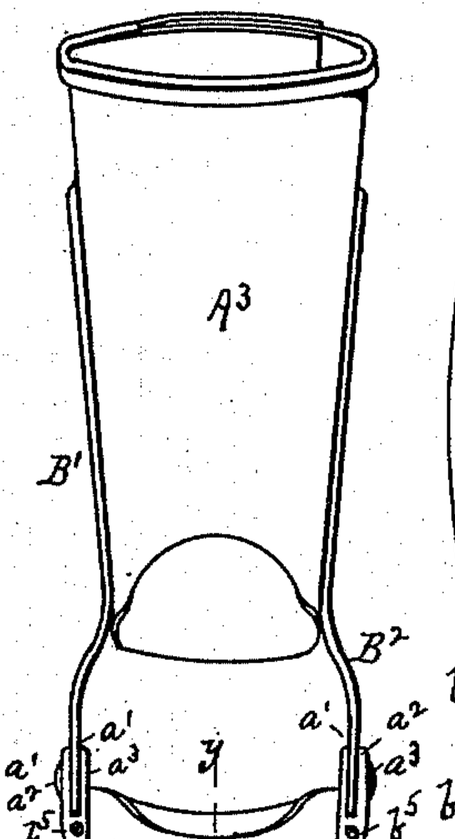


Fig. 5

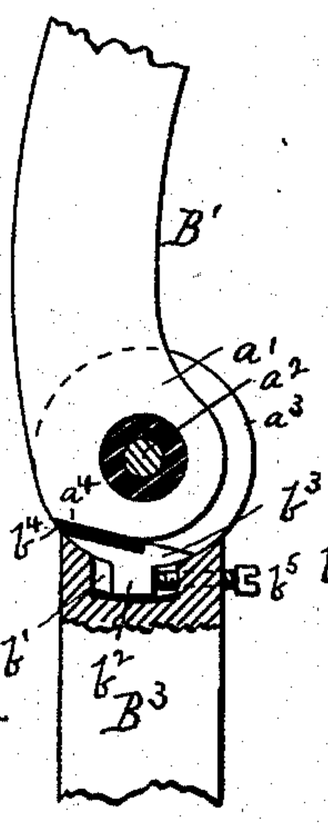


Fig. 6

Fig. 3.

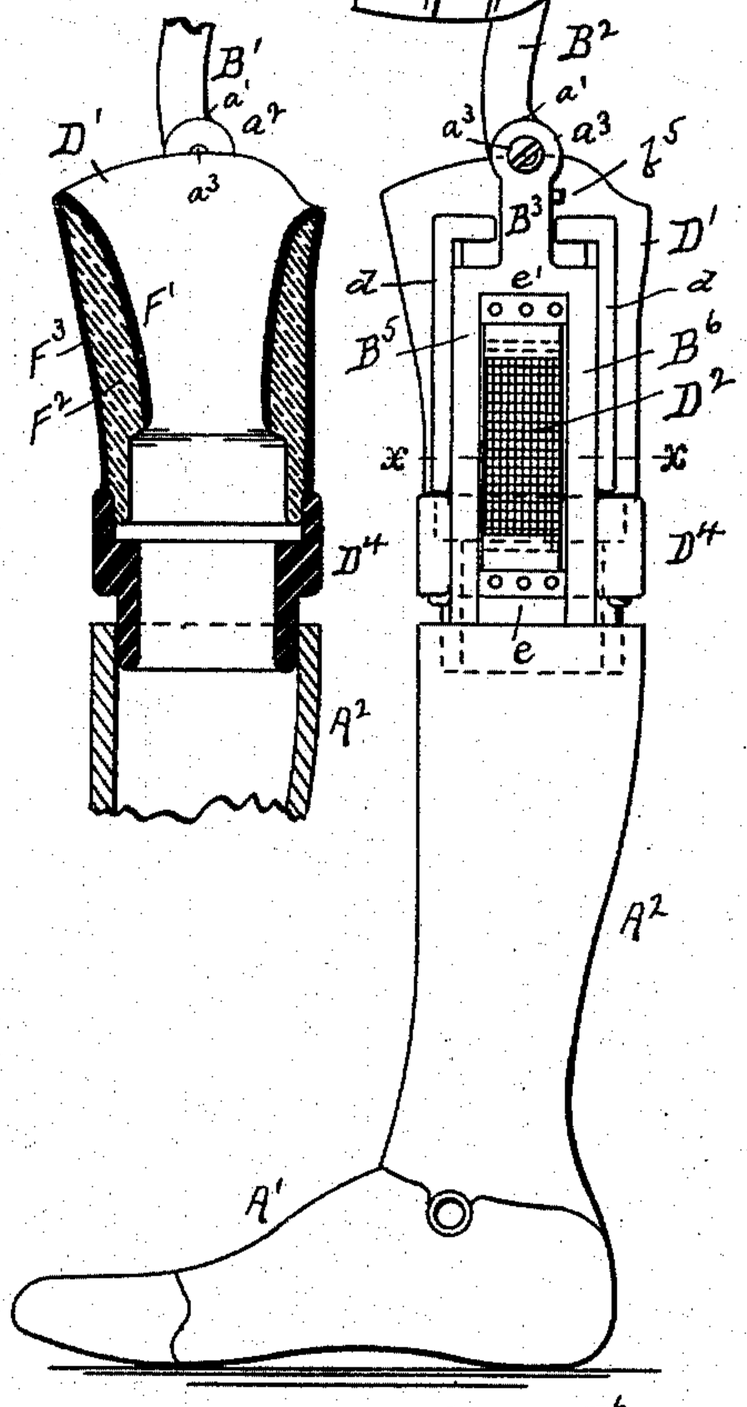


Fig. 7

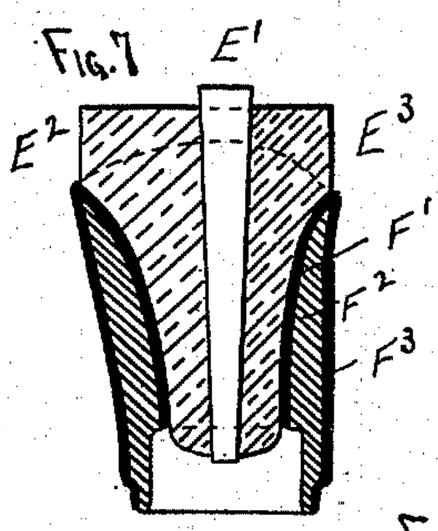


Fig. 10

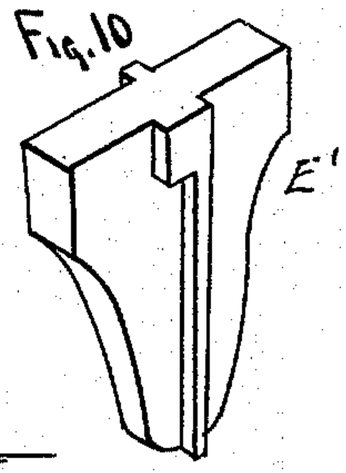


Fig. 8

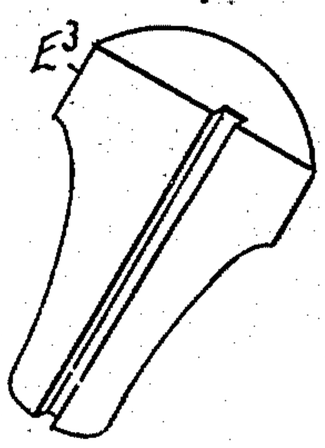


Fig. 4

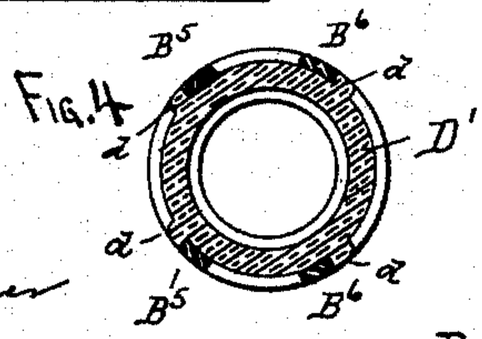
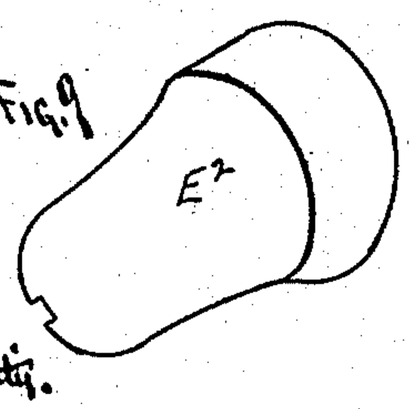


Fig. 9



Witnesses.
A. B. Palmer
Wm. H. Peterson.

Eric H. Ericksson
Inventor.
By Charles H. Woodward Atty.

UNITED STATES PATENT OFFICE.

ERIC H. ERICKSSON, OF ST. PAUL, MINNESOTA.

ARTIFICIAL LEG.

SPECIFICATION forming part of Letters Patent No. 527,525, dated October 16, 1894.

Application filed August 27, 1894. Serial No. 521,356. (No model.)

To all whom it may concern:

Be it known that I, ERIC H. ERICKSSON, a citizen of the United States, residing in St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Artificial Legs, of which the following is a specification.

This invention relates to "artificial legs," and consists in the construction, combination and arrangement of parts, as hereinafter set forth, and specifically pointed out in the claims.

In the drawings: Figure 1 is a side elevation. Fig. 2 is a rear elevation. Fig. 3 is a longitudinal section on the line "*x x*" of Fig. 2. Fig. 4 is a cross section on the line "*y y*" of Fig. 2. Fig. 5 is an enlarged sectional detail of the knee joint, and Fig. 6 is an enlarged sectional view of the same. Fig. 7 is a cross sectional view of the slip socket, illustrating its construction. Figs. 8, 9, and 10 are perspective views of the three parts of the "cast" of the stump of the amputated limb over which the slip socket is formed, illustrating its construction.

A′ represents the foot portion, A^2 the lower leg portion, and A^3 the portion laced or strapped around the thigh, these parts being of the usual construction. The thigh portion A^3 is provided with metal straps B′ B^2 extending below its lower part, and each terminating in a socket *a′* adapted to be clasped by bolts a^2 between "ears" a^3 on standards B^3 B^4 rising from each side of the leg portion A^2, as shown. The portion of the upper ends of the standards B^3 B^4 are cut out at *b′*, (see Figs. 5 and 6,) and adapted to receive a lug b^2, on a small stop plate b^3, fitting between the ears a^3 and with its upper surface in contact with the lower surface of the socket *a′*. The lower portion of the socket *a′* is flattened as shown at a^4, and the upper surface of the plate b^3 is provided with a cavity filled with a strip of "vulcanite" or other similar suitable material b^4, to form a cushion to receive the impact of the socket when the leg is in use.

Set screws b^5 are tapped through the standards B^3 B^4 into the cavities *b′* and adapted to be set against the lugs b^2 to adjust the plate b^3 to take up the wear of the cushion b^4, as well as to adjust the movement of the joint. and symmetrical form is produced, which corBy this simple arrangement a noiseless joint is formed, so that no unpleasant metallic rattling is heard when the leg is in use.

The standards B^3 B^4 are bifurcated, or forked, as shown at B^5 B^6, and adapted to form guides for a socket D′ which slides up and down between the standards, being supported from turning or moving sidewise by ribs *d*, as shown.

The socket D′ is connected to the standards B^3 B^4 by elastic strips D^2 D^3, the ends of the elastic being secured at their upper ends by clamps *e′*, to the standards, and at their lower ends by the clamps e^2 to the socket D′, as shown. By this means the socket is held normally upward to its highest position.

The upper portion of the lower leg portion A^2, is formed hollow, and with a sleeve D^4 fitting into its upper part, the upper portion of the sleeve forming a socket or step for the lower end of the socket D′, as shown. The sleeve D^4 will generally be formed of wood or some other suitable light material, and covered with buckskin or other leather, or other similar suitable material, to avoid noise or unnecessary friction between the parts.

The socket D′ is formed to fit over the stump of the amputated limb, and the manner of forming and constructing it is an important feature of my invention, which I will now describe.

A plaster of paris cast is first made of the stump of the severed limb, and a wedge shaped plate E′, (see Fig. 10,) inserted into the matrix thus formed. The semi-liquid plaster of paris is then poured into the matrix on each side of the central dividing plate E′, to form the cast. When the material is "set" sufficiently, the wedge plate is removed, which permits the two side sections E^2 E^3, (see Figs. 7, 8, and 9,) to be readily removed from the matrix, to thus permit the ready removal of the sections E^2 E^3 from the matrix being the function of the wedge plate E′. Then by placing the three portions E′ E^2 E^3 together again, as shown in Fig. 7, an exact model of the severed stump is produced. I then mold around the "cast" thus formed, a covering of raw-hide previously soaked to render it pliable, and on the outside of this raw-hide covering I glue, or otherwise secure, small strips of soft light wood, until a somewhat rounded

responds to the shape of the corresponding portion of the other or sound limb, and also to conform to the shape of the upper portion of the lower leg section A^2, as shown, the lower end being formed to fit the sleeve D^4, as shown in Fig. 3. The wood filling is then covered with a layer of raw-hide molded thereon while in a plastic state. When the raw hide has become dried, a very hard, tough socket is produced, which at the same time is very much lighter than any other construction with which I am acquainted.

The inner layer of raw-hide is designated by F′, the wood filling by F^2, and the outer coating of raw-hide by F^3, as shown in Fig. 3.

The socket D′ is open at the bottom, so that the air has free access to the end of the stump of the severed limb, which is a very desirable and necessary feature to secure proper ventilation.

By this simple arrangement a very free easy working joint is obtained, and a flexible natural movement, which renders the limb very convenient and agreeable to the wearer, and noiseless when in use. By this construction also the "slip" of the joint is between the socket and sleeve and lower leg portion, and not between the socket and the severed stump, as in some forms of artificial limbs.

The socket is held at all times in close contact with the stump of the severed limb, and there is consequently no friction between the natural limb and any portion of the artificial limb.

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

1. In an artificial limb, the thigh portion having the straps provided with sockets, the lower leg portion having the straps provided with ears and united by pivot bolts, in combination with adjustable cushioned stops, whereby the movement of the lower limb portion may be adjusted and the joint rendered noiseless, substantially as and for the purpose set forth.

2. In an artificial limb, the thigh portion and lower limb portions united by jointed straps, a socket molded to the stump of the severed limb, and slidable vertically between said straps, and a sleeve between the lower leg portion and said socket, substantially as and for the purpose set forth.

3. In an artificial limb, the thigh portion and lower limb portions united by jointed straps, a socket molded to the stump of the severed limb, and slidable vertically between said straps, a sleeve between the lower leg portion and said socket, and elastic supporting straps uniting said socket to said straps, substantially as and for the purpose set forth.

4. The method of constructing the socket for the stump of a severed limb in an artificial leg, consisting in first forming a matrix by molding, then inserting into said matrix a wedge shaped dividing plate, then taking a "cast" of the portion of the matrix not occupied by said wedge shaped plate, then removing said wedge shaped plate, and sections of said cast, then reuniting said cast sections and wedge shaped plate to form a cast on which the socket for the stump of the severed limb can be molded, substantially as and for the purpose set forth.

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

ERIC H. ERICKSSON.

Witnesses:
JOHN E. ERICKSON,
C. N. WOODWARD.