

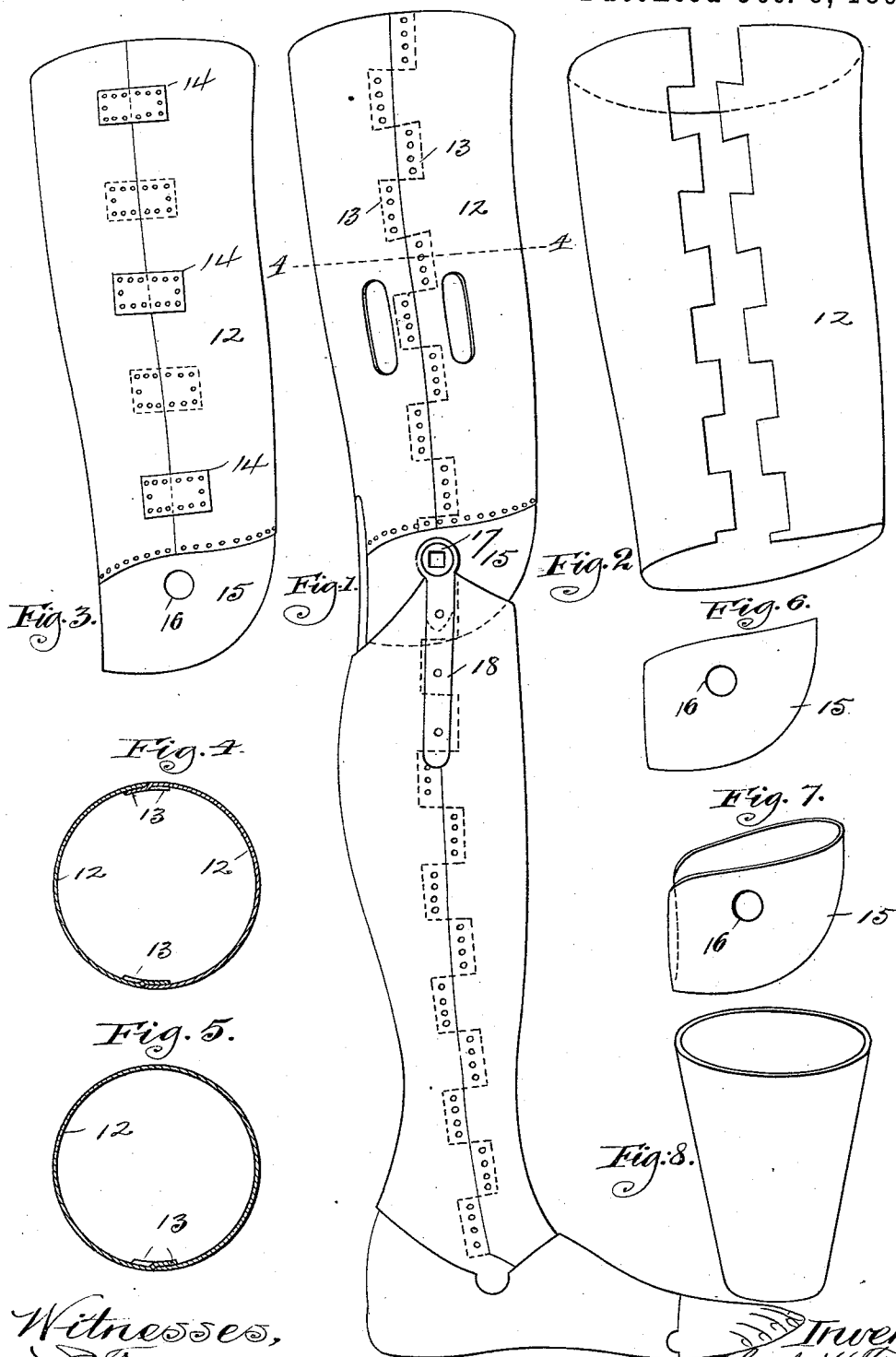
(No Model.)

2 Sheets—Sheet 1.

C. H. TRUAX.
ARTIFICIAL LEG.

No. 527,133.

Patented Oct. 9, 1894.



Witnesses,
J. J. Mann
J. B. Goodwin

Inventor,
Charles H. Truax
By Offield, Ford & Lathum
Attys

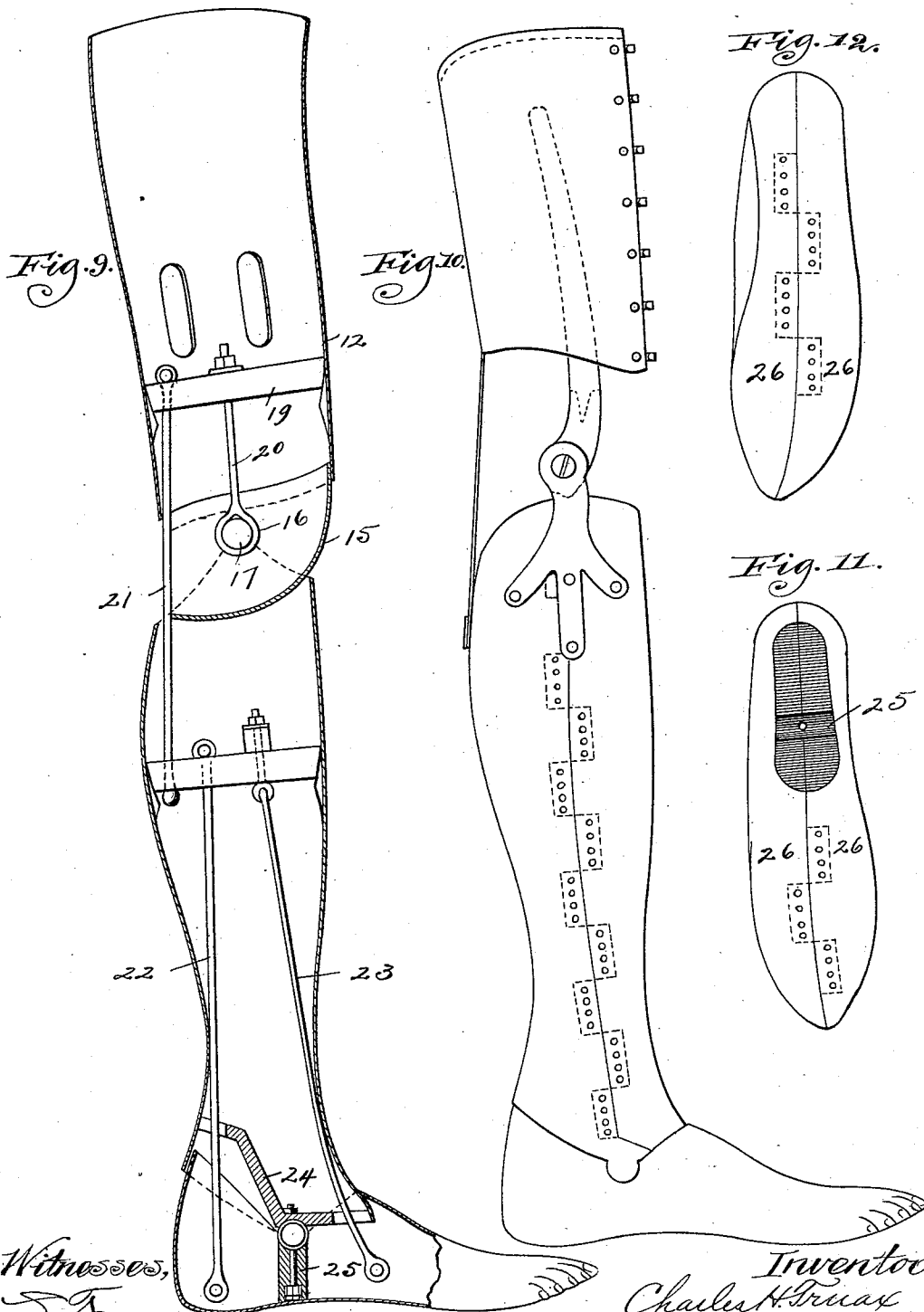
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UNITED STATES PATENT OFFICE.

CHARLES H. TRUAX, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
GEORGE E. MARKS, OF NEW YORK, N. Y.

ARTIFICIAL LEG.

SPECIFICATION forming part of Letters Patent No. 527,133, dated October 9, 1894.

Application filed January 12, 1891. Serial No. 377,459. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. TRUAX, a citizen of the United States, residing at Chicago, Illinois, have invented certain new and useful Improvements in Artificial Legs, of which the following is a specification.

My invention has for its object to improve the construction of artificial legs so as to decrease materially the weight thereof without impairing their strength and necessary rigidity.

In the construction of artificial legs the chief requisites are strength, inflexibility of the members, lightness and durability. In my invention I attain all these desired results by certain improvements in the materials used and in the forms of construction of the parts.

In carrying out my invention I use aluminium as the material for the major portions of the members, preferably in the form of sheets, which may be wrought to hollow tubular or conical form according to the shape of the stump to be fitted. In order to provide a bearing which shall be durable I employ by preference steel or other hard metal and the bearings are supported by blocks or bridges secured at the ends of the aluminium sections or members. Instead of employing the knee and ankle joint members formed from steel or other hard metal alone I use by preference a composite piece, the bearing portions of which are from steel or other hard metal with a shank or extension of aluminium riveted thereto or cast thereon, thereby lightening the joint members without impairing their efficiency. I also make the foot or the major portion thereof of aluminium, wrought hollow and in sections, and provided with proper bearing blocks for the connection of the joint members, of the heel cord, and other accessories.

Other features of improvement will be mentioned in the detail description.

In the accompanying drawings, Figure 1 is a side elevation of an artificial leg—in this instance adapted to an amputation at the thigh—consisting of the thigh, lower leg and foot piece. Fig. 2 shows the blank from which the body of one of the members is

formed. Fig. 3 is a side elevation of the thigh piece showing the margins abutted and secured by stay pieces which may be one or more in number. Fig. 4 is a cross section on the line 4—4 of Fig. 1, showing the thigh piece composed of two sheets. Fig. 5 is a similar view showing the thigh piece made of a single sheet bent to hollow tubular form. Figs. 6 and 7 are, respectively, a side elevation and a perspective of a cup shaped piece forming the lower end of the thigh and having one member of the hinge secured thereto; and Fig. 8 is a perspective view of a seamless cone shaped thigh piece. Fig. 9 is a side elevation, sectional through the thigh, leg and foot piece to expose the construction of the interior accessories of the limb. Fig. 10 is a side elevation of a limb for an amputation below the knee; and Figs. 11 and 12 are, respectively, top and bottom plan views of a foot constructed in two longitudinal sections united lengthwise of the foot.

In carrying out my invention I make the sections or members of the limb, such as the thigh piece, leg and foot of aluminium which may be worked in many ways to suit the exigencies of the amputation to which it is to be adapted. For instance where the stump to be fitted presents irregularities of contour requiring special shaping other than a true cone or tubular form, I prefer to make the thigh piece from one or more sheets of aluminium bent to the approximate shape and having their margins united together in some convenient way—for example as shown in Figs. 1 to 5 inclusive, and then after bringing the thigh piece to its approximate form it may be swaged or otherwise formed to provide for these irregularities of the stump; but where the stump presents a well rounded and conical form I prefer to form the thigh piece by stamping, pressing, spinning or drawing it seamless, as shown in Fig. 8, and the same method may be followed for leg sections for amputations below the knee and for the bearing pieces shown in Figs. 6 and 7.

In the drawings 12 (Fig. 1) shows a thigh piece formed from two sheets of aluminium, the margins of the sheets being provided with interlocking projections 13, the members of

which may be dove-tailed together or simply lapped and riveted, as indicated, and the same construction is shown in Fig. 4.

In Fig. 2 the thigh piece is shown as constructed of two sheets, the margins being joined on longitudinal lines by the interlocking projections, while in Fig. 3 the edges of the plate or plates are abutted and are fastened by one or more stay pieces 14, but instead of the numerous pieces shown a single strip the length of and adapted to cover the joint may be used. The same method of construction may be followed for the limb sections for amputations below the knee, as indicated in Figs. 1, 9 and 10.

In Figs. 6 and 7, 15 represents a cup-shaped piece which is spun, swaged or cast its margins being secured to the lower end of the thigh piece by rivets or otherwise. These cup shaped pieces have apertures 16 through which the knee bolt 17 passes, the ends of which knee bolt are journaled in the hinge members 18. In order to lighten these hinge members I propose to construct their bearing portions from steel and their extensions or shanks from aluminium, the two metals being joined in any convenient manner, as for example, by riveting or by casting the aluminium about the metal, the part above the dotted lines indicating the steel portion and that below the dotted lines the aluminium shanks. These shanks or extensions are riveted or otherwise fastened to the lower leg section. Within the thigh piece is secured in any convenient way the bridge 19 from which the bolt 20 depends and is secured to the lower leg section. The lower end of this bolt has a hinge connection with bolt 17.

21 represents the knee cord, 22 the heel cord and 23 the ankle cord. At the lower end of the leg pieces is the bridge 24 which may be cast in one or more pieces and secured by screws, rivets or otherwise. This bridge piece forms the upper bearings for the ankle joint, the lower bearing being formed by a block 25. The foot is formed in two or more sections 26, which are conveniently cast, pressed or swaged in hollow form, and when made from aluminium will be light and yet sufficiently strong. The sections may be united by the overlapping projections previously described or by through bolts or in any other convenient manner.

I claim—

1. An artificial leg member constructed from aluminium wrought in hollow form and having secured therein bridge pieces to support the connections, substantially as described.

2. An artificial leg comprising in combination a plurality of members constructed wholly or in part from aluminium in hollow form and provided with hinge joints, said joints having their bearing portions formed of steel or suitable hard metal and their shanks or extensions of aluminium, substantially as described.

3. An artificial foot member constructed wholly or in part from aluminium in two or more longitudinal sections, with the margins of the sections interlocked substantially as described.

CHARLES H. TRUAX.

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