J. Monroe,

Artificial Leg.

No. 58,351. Patented Sep. 25, 1866.

Fig: 1.

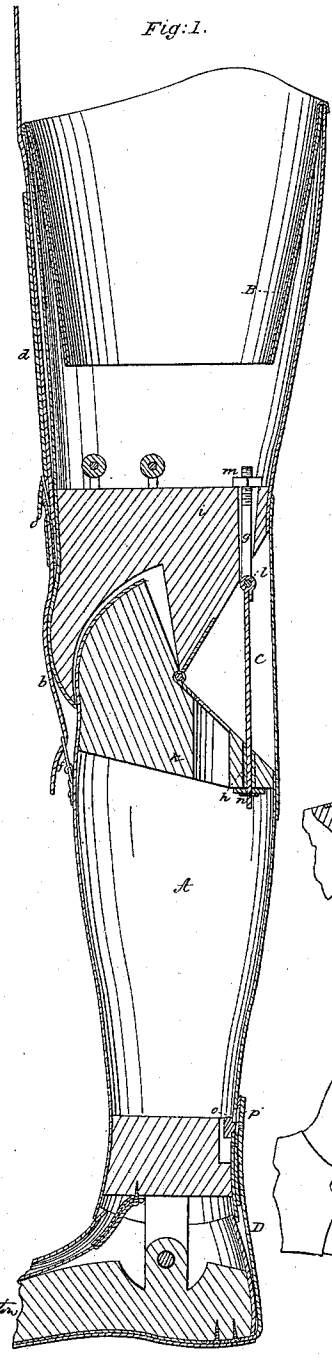


Fig: 2

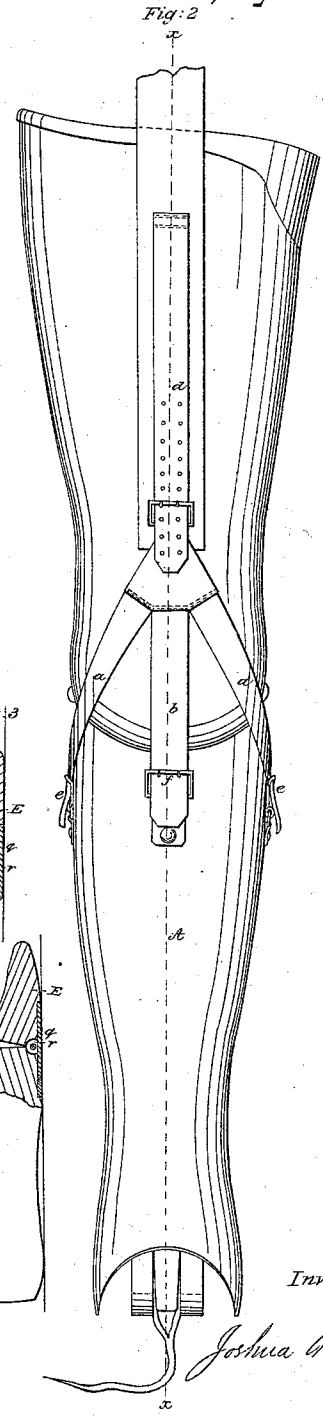


Fig: 3

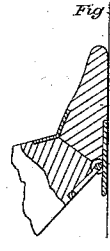
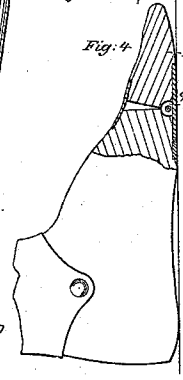


Fig: 4



Witnesses:
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AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

JOSHUA MONROE, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND JETUR GARDINER, OF SAME PLACE.

IMPROVEMENT IN ARTIFICIAL LIMBS.

Specification forming part of Letters Patent No. **58,351**, dated September 25, 1866.

To all whom it may concern:

Be it known that I, JOSHUA MONROE, of the city, county, and State of New York, have invented a new and useful Improvement in Artificial Limbs; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a vertical central section of this invention, the line *x x*, Fig. 2, indicating the plane of section. Fig. 2 is a front elevation of the same. Figs. 3 and 4 are sectional views of the toe-joints, showing the foot in different positions.

Similar letters of reference indicate like parts.

This invention consists in the arrangement of elastic straps, in combination with an artificial leg or arm, to be secured to a stump below the knee or elbow joint, in such a manner that the side irons can be dispensed with, and thereby the weight of the limb is reduced; and, furthermore, said straps can be readily so adjusted that they keep the limb up tight in any position to which the joint is brought.

It consists, also, in the arrangement of a rigid tendon, in combination with the knee or elbow joint, in such a manner that said tendon will form a positive stop when the limb is straightened, and the limb will be relieved from all strain.

It consists, further, in an ankle-tendon placed on the outside of the shell, and so arranged as to form a stop for the joint, and also a guard, whereby the stocking and heel of the shoe are prevented from catching in the joint.

It consists, also, in the arrangement of a hinged toe-plate, in combination with the toe-joint, in such a manner that the toes will be compelled to turn down flat whenever the foot is put down.

It consists, finally, in the employment or use of a rawhide socket, in combination with an artificial limb, in such a manner that a strong, durable, cheap, and convenient socket is obtained, which is applicable to artificial legs or arms, and which can be readily formed to correspond to the stump.

A represents an artificial limb, which, when to be attached to a stump below the knee or elbow joint, is held in position by elastic side straps, *a*, in combination with a center strap, *b*. These three straps diverge from a common buckle, *c*, which is adjusted on a leather strap, *d*, that is firmly secured to the leg or arm, and the lower or loose ends of said elastic straps are secured in buckles *c f*, which are fastened to the outside of the shell of the artificial limb, as clearly shown in the drawings. By means of the buckles *c* all the elastic straps can be strained simultaneously, and by the buckles *c f* the tension of each strap can be adjusted independent of that of the other straps, and said straps can be easily so regulated that they will sustain the artificial limb in any position to which the knee or elbow joint may be brought.

For the purpose of attaching the artificial limb to the stump, I use a cup, B, made of rawhide, and so shaped that it will fit the stump perfectly and all chafing is avoided. My rawhide cup can be easily formed over suitable cores, which latter correspond in shape to the stump to which the cup is to be fitted.

C is the tendon, which, instead of being made of catgut or other flexible material, is made of iron or other rigid material, and which passes through slots *g h* in the blocks or partitions *i k*, which are secured in the shell of the limb, as shown in Fig. 1 of the drawings. Said tendon is made of two parts, which are hinged together by means of a pivot, *l*, and the upper part is provided with a nut, *m*, whereas through the bottom end of the lower part a pin, *n*, is passed, so that when the limb is stretched the tendon forms a positive stop, and the joint is relieved of all strain.

By means of the nut *m* the tendon is adjustable, to correspond to the desired position of the limb. The ankle-tendon D, in an artificial leg made according to my invention, is placed on the outside of the shell, as shown in Fig. 1. Its bottom end is turned under the heel, and fastened thereto by screws or other suitable means, and its top end is provided with a T-shaped button, *o*, which slides up and down in a mortise, *p*, made for that purpose in the shell. The length of this mortise is so adjusted that the same, in combination with the button *o*, forms a positive stop at both ends, and the

ankle-joint cannot be moved in either direction beyond the desired limit.

The position of the toes E is governed by the toe-plate *q*, which forms a part of the toe-joint, one part of said toe-plate being firmly connected to the toes, while its other part extends beyond the pivot *r*, so that when the foot is brought flat down on the ground the toes are compelled to turn down to the position shown in Fig. 4, and at the same time the toe-plate allows the foot to assume the position shown in Fig. 3.

By this arrangement of the several parts my limb is rendered strong and durable in all its parts. It can be readily adapted to the stump either above or below the knee, and its mechanism is so simple that the same is not liable to get out of order.

What I claim as new, and desire to secure by Letters Patent, is—

1. The elastic side straps, *a a*, in combination with straps *d b* and with the limb A, constructed and operating substantially as and for the purpose set forth.

2. The arrangement of a tendon, C, made of rigid material, in combination with the knee-joint of an artificial leg, constructed and operating substantially as and for the purpose described.

3. The button *o* and mortise *p*, in combination with the ankle-tendon D, constructed and operating substantially as and for the purpose described.

4. The toe-plate *q*, applied, in combination with the toe-joint, substantially as and for the purpose set forth.

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