J. Monroe,

Artificial Leg,

No. 49,038, Patented July 25, 1865.

Fig: 1

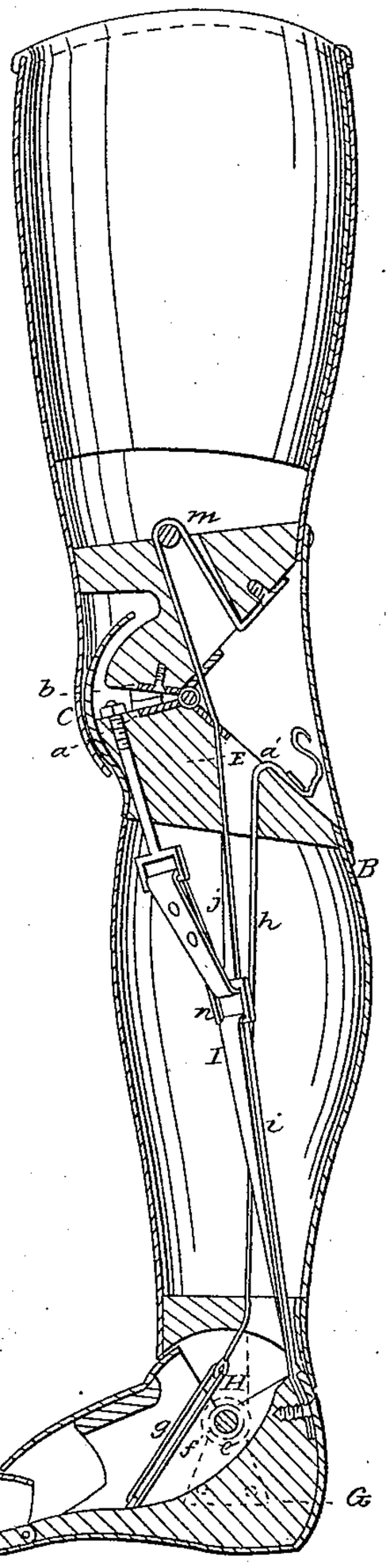


Fig: 2

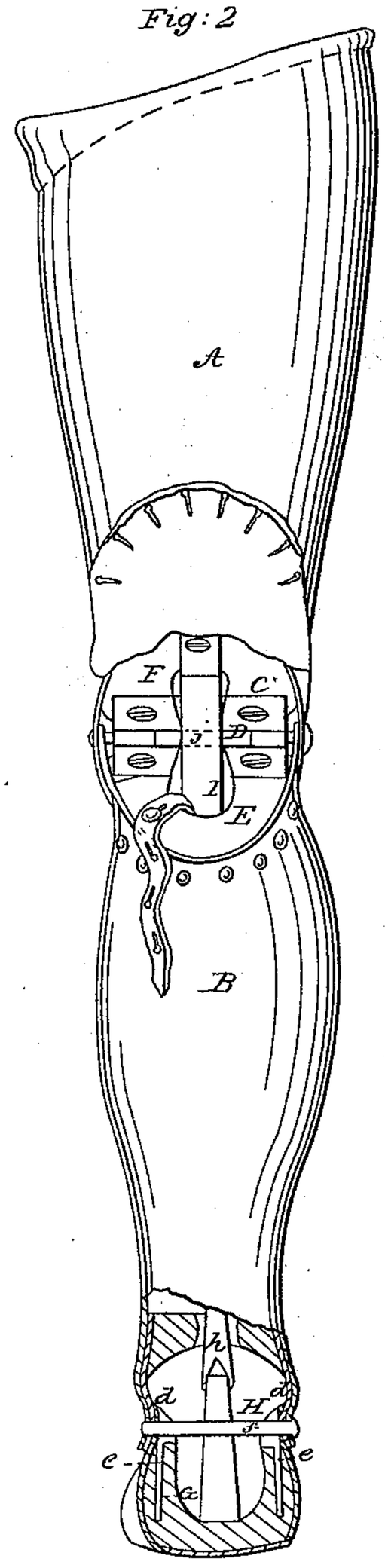
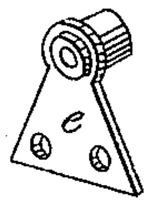


Fig: 3

Fig: 4



Witnesses:

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M. M. Livingston

Inventor:

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UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN ARTIFICIAL LEGS.

Specification forming part of Letters Patent No. **49,038**, dated July 25, 1865.

To all whom it may concern:

Be it known that I, JOSHUA MONROE, of No. 560 Houston street, in the city, county, and State of New York, have invented a new and useful Improvement in Artificial Legs; 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 a part of this specification, in which—

Figure 1 represents a longitudinal vertical section of this invention. Fig. 2 is a sectional rear elevation of the same. Figs. 3 and 4 are detached perspective views of portions of the ankle-joint.

Similar letters of reference indicate like parts.

This invention consists in a double butt-hinge fastened to two pieces of wood, one of which is inserted in the leg above and the other below the knee-joint, and which are shaped in such a manner that the requisite motion is left to the leg backward and forward, and that at both extremities of its motion the hinge and the pieces of wood are brought flat against each other and a positive stop is obtained.

The invention consists, further, in an ankle-joint composed of two plates secured to the lower end of the leg and two brackets fastened in the heel part of the foot, in combination with a pin passing transversely through the plates and brackets in such a manner that a firm, durable, and simple joint is obtained, which leaves the foot at liberty to swing up and down as far as may be desirable.

The invention consists, finally, in a tendon, one part of which extends up from the heel to a loop suspended from the bight of a belt, one end of which is secured to an eyebolt secured to the lower part of the knee-joint and in front of the same, whereas its opposite end extends up over a rod or roller in the upper part of the knee-joint, to which it is secured, near the hough, in such a manner that when the knee-joint is straightened out the tendon will have a tendency to prevent the same from bending, and a spontaneous breaking down or involuntary bending of the joint is avoided.

A represents the cup or upper part of the artificial thigh, which may be made of rawhide or any other suitable material, and which is connected to the artificial leg B by the knee-joint C. This knee-joint consists of a double butt-hinge, D, which is fastened to two pieces of wood, E F, one inserted in the lower part of the thigh and the other in the upper part of the leg, as clearly shown in Fig. 1 of the drawings. The shape of these blocks of wood is such that each forms two planes, *a a' b b'*, to which the four wings of the butt-hinge can be secured, and when the joint is stretched the planes *a a'*, or cushions secured to them, are brought together, as shown in Fig. 1; but if the joint bends, the planes *b b'* come in contact with each other, and the motion of the joint is thus provided with a positive stop at both extremities. The hinge is not liable to be forced off, and the joint is strong, cheap, and durable.

The leg B connects to the foot G by the ankle-joint H, which is composed of two plates, *d d*, secured in the lower end of the foot, and two brackets, *e e*, fastened on the sides of the foot, and a pin, *f*, which passes transversely through said plates and brackets, as clearly shown in Fig. 2 of the drawings.

A spring, *g*, is fastened at one end to the inner surface of the sole and at the opposite end to a cord or band, *h*, which extends up through the leg and is secured to the block E, as clearly shown in Fig. 1 of the drawings. By pulling the cord *h* the tension of said spring can be regulated, and by the action of the spring, which is connected to the foot in front of the pivot of the ankle-joint, the foot is constantly kept in the proper position.

By the combination of the plates *d*, brackets *e*, and pin *f* an ankle-joint is produced which allows the foot to move back and forth as much as may ever be required. The motion allowed to the foot of my artificial leg is similar to that of a natural foot, and an artificial leg is thus produced which is unsurpassed in beauty, lightness, durability, and freedom of its motions.

The tendon I is made of two distinct parts, *i* and *j*, which are connected by the loop *k*. The lower portion, *i*, of the tendon is doubled up, and both ends are secured to the heel by a screw or any other suitable means, as clearly

shown in Fig. 1 of the drawings; but the other part, *j*, of said tendon is fastened with one end to an eyebolt, *l*, which is secured in the block E, and its other end extends up through holes or mortises in the two blocks and over a roller or rod, *m*, secured to the upper surface of the block F, and thence down, being secured to the inclined surface *b'* by a screw or other suitable means. The loop *k* passes through the bights of both parts, *i j*, of the tendon, and consequently is free to accommodate itself to the varying positions of the leg. If the leg is stretched, the tendon has a tendency to keep the inclined planes *a a'* in contact with each other, and a spontaneous breaking down of the leg is prevented.

By turning the nut of the eyebolt *l* the tension of the tendon can be regulated.

If desired, the tendon may be made to extend down under the heel and connected to a roller with ratchet-wheel and pawl, so that it can be tightened from below.

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

1. The double butt-hinge D, in combination with the blocks E F, having planes *a a' b b'*, and with the two parts of an artificial leg above and below the knee-joint, constructed and operating substantially as and for the purpose set forth.

2. The tendon I, composed of two parts, *i j*, which are connected to each other by a loop, *k*, and to the various parts of the artificial leg—viz, the heel, the block E below, and the block F above, the knee-joint—substantially in the manner and for the purpose described.

JOSHUA MONROE.

Witnesses:

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