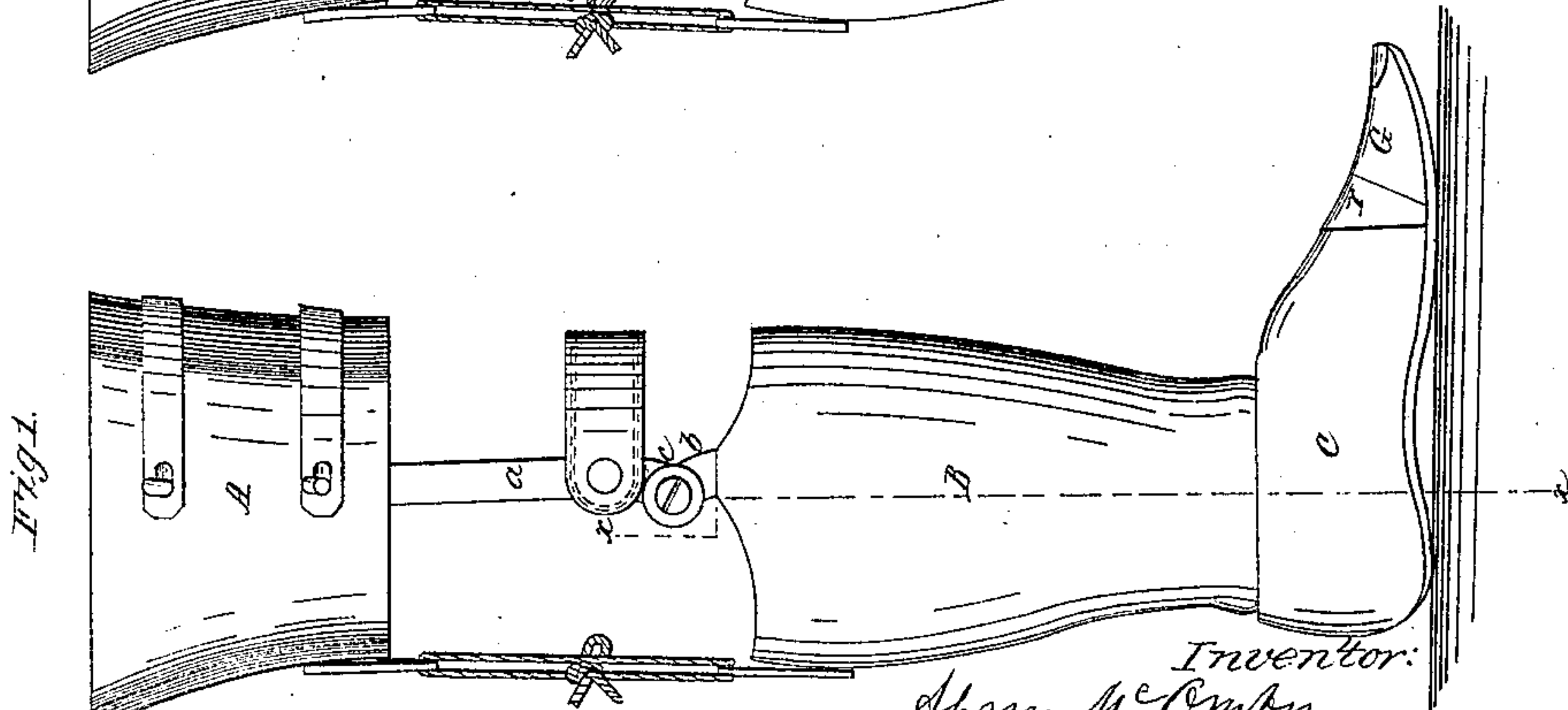
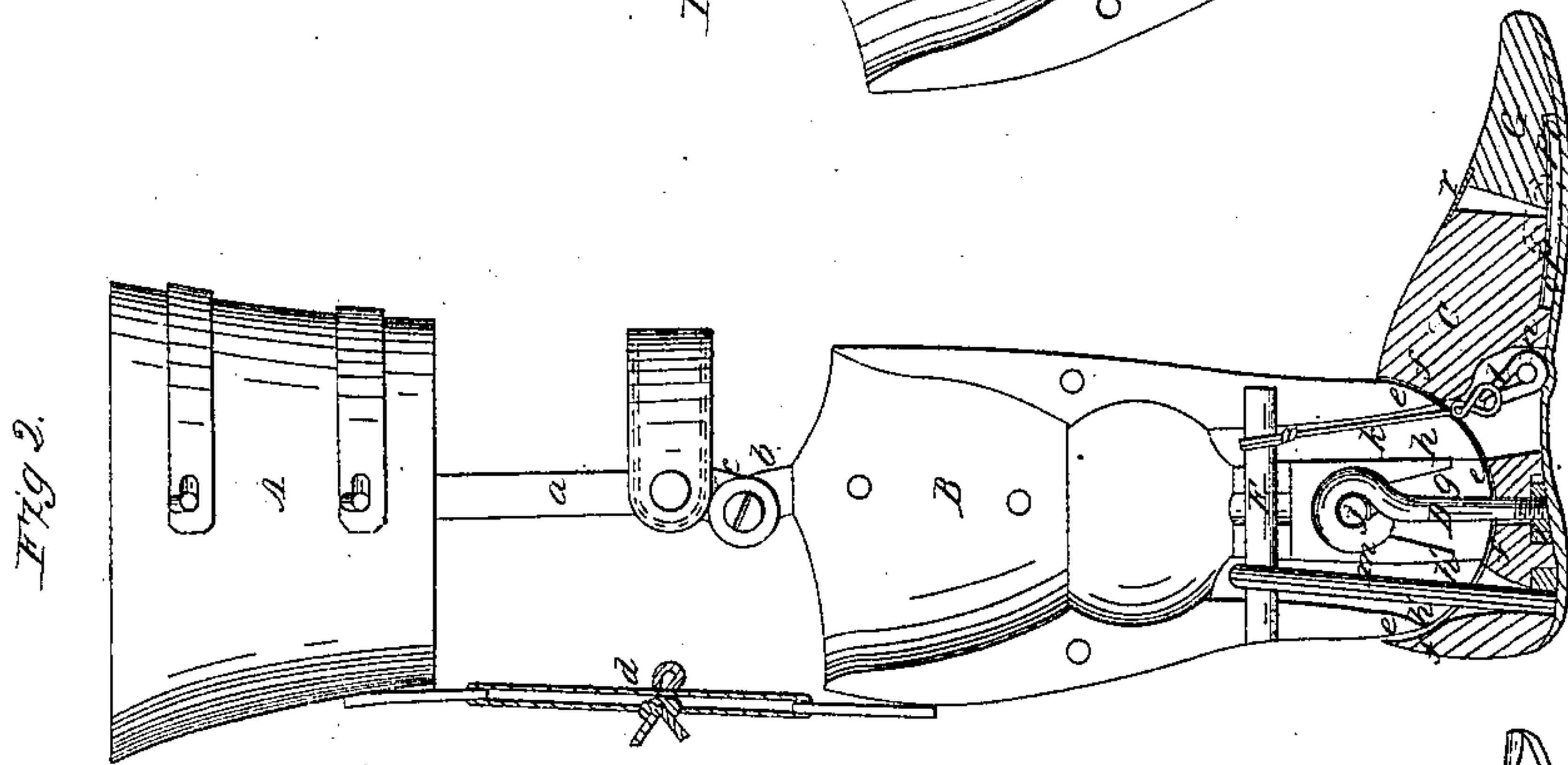
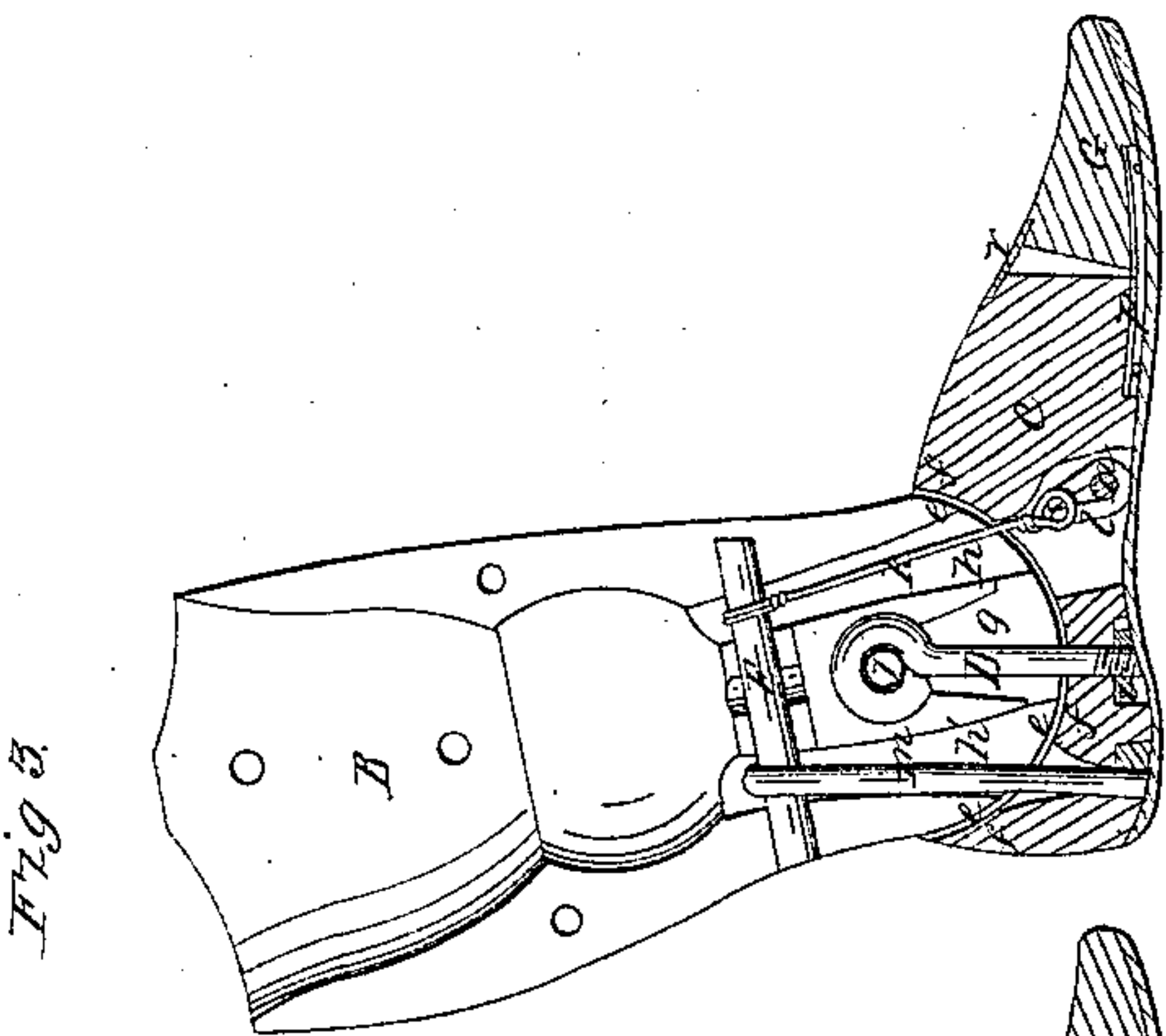
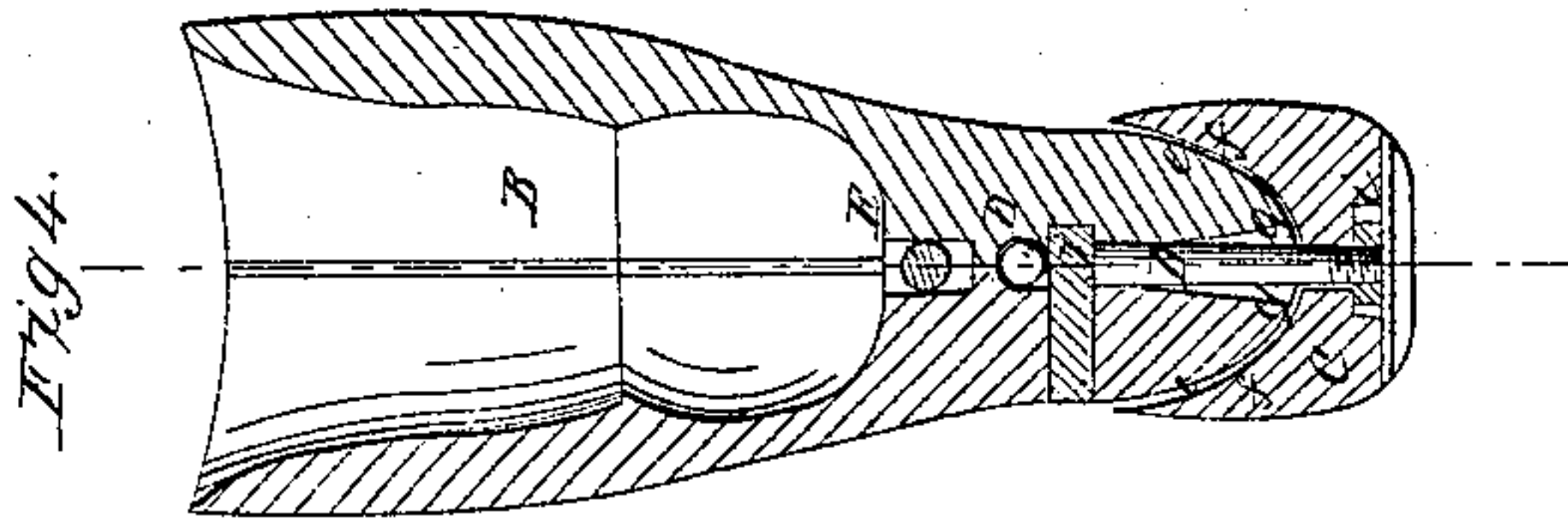


A. McOmber,

Artificial Leg.

N^o 71,197.

Patented Nov. 19, 1887.



Witnesses:
R. M. Campbell
Edw. Scholten

Inventor:
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Attorneys

United States Patent Office.

ABNER McOMBER, OF SCHENECTADY, NEW YORK.

Letters Patent No. 71,197, dated November 19, 1867.

IMPROVEMENT IN ARTIFICIAL LEGS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ABNER McOMBER, of Schenectady, in the county of Schenectady, State of New York, have invented an Improved Artificial Leg; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a view of one side of an artificial leg, having the improvement applied to it.

Figure 2 is a sectional view of the lower leg and the foot, showing the construction of the ankle-joint and toe-joint.

Figure 3 is a sectional view of the ankle and toe-joints, showing the leg inclined backward and the foot in a horizontal position.

Figure 4 is a transverse section through the lower section of the leg and the foot, taken in the vertical plane indicated by red line $x x$ in fig. 1.

This invention relates to an improved mode of constructing the ankle and toe-joints of artificial legs, whereby great strength and durability are obtained, and a free, natural inclination of said joints allowed without complication of parts.

The nature of my invention consists in fitting the foot-section to the lower leg-section, by means of a ball and socket, and in connecting these parts together by a pivot-joint extending transversely across the ankle, and also by elastic and non-elastic straps, which are attached to the foot-section, and to a pin passing longitudinally through the ankle above the pivot-joint, and which operate to keep the foot in a normal position, and allow it to accommodate itself to the movements required of it in walking, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

The leg which I have represented in the drawings is constructed with a thigh-section, A, for receiving a stump of a leg which is amputated above the knee-joint, but this upper section may be omitted for stumps of legs which are amputated below the knee-joint. When said thigh-section is used, it is connected to the lower leg-section B, by means of metal rods $a b$, which are jointed together by a rule-joint, as shown at c , in figs. 1 and 2, so as to allow a flexure of the lower leg backward, but not too far forward. The cord-attachment d , at the back of the knee-joint, is designed for allowing a person to adjust the throw of the leg to his own convenience. The lower leg-section B, which may be made of wood, or other suitable substance, terminates at its lower end or ankle in a rounded surface, which forms what I shall denominate a ball, as shown at $e e$, figs. 2, 3, 4. This ball or half ball e is fitted into a socket, $f f$, of corresponding form somewhat, which is made in the upper part of the foot-section C, as shown in figs. 2, 3, and 4. This forms a ball-and-socket or universal joint, which will allow the foot-section to have all the movements required of it. The end of the leg-section B is chambered out, so as to have a central laterally and longitudinally flaring recess, g , and two recesses $h h'$ of a corresponding flaring form, as shown in the drawings. The central hole or recess g is designed for receiving an eye-bolt, D, which passes down through the foot C, and receives a nut, i , on its lower end, and which receives transversely through its eye a pin or stud, j . The front recess or hole h receives through it a rod, k , which is secured at its upper end to the longitudinal pin E, and at its lower end to a band of India rubber, l . The rear recess or hole h' receives in it a strong strap or flexible rod, m , which is secured firmly to the heel of the foot-section, and also connected to the pin E, as shown in figs. 2 and 3.

By means of the nut i , on the lower end of the eye-bolt D, the ball e on the foot-section is drawn to its seat, and held with proper firmness, so that the two sections B and C will articulate about the axis of pivot j , indicated in fig. 3, which axis is concentric to the longitudinal curve of the ball and socket, as shown in figs. 2 and 3. There is also allowed a lateral motion to the foot and leg, by the lateral enlargement of the recess g , which receives the bolt D.

The proper position of the foot is always obtained by the use of the India-rubber strap l , which, being connected to the longitudinal pin E by the rod k , will be stretched or extended when the toe or front part of the foot is depressed, and then, upon releasing the pressure upon the foot, this spring l will contract and return the foot to its normal position, as shown in fig. 2. In rear of the pivot-connecting bolt D is the flexible but non-

elastic strap *m*, which is designed for holding up the heel against the elastic force of the spring *l*, and thereby preventing the front part of the foot from being drawn too high by said spring. This spring *l* is attached to a pin, *n*, which is arranged in a recess at or near the sole of the foot, as shown in figs. 2 and 3.

The toe-section *G* of the foot is pivoted by a strap and pivotal connection, as indicated in fig. 2, in dotted lines, and held in a natural position, shown in this last-named figure, by the combined action of a spring, *p*, and flexible construction *r*. The spring *p* is a flat one, and it is secured in recesses which are made into the sole of the foot and toe-sections, so as to lie flat therein. The connection *r* forms a covering for the upper portion of the joint, and holds the toes up to their proper position.

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

1. In an artificial leg, having a ball-and-socket joint such as described and shown, I claim the central eye-bolt *D* arranged as shown, in combination with the pin *j*, bar *E*, flexible strap *m*, rod *k*, and spring *l*, all substantially in the manner and for the purpose described.

2. In an artificial leg, having a ball-and-socket joint such as described and shown, I claim the arrangement of the bolt *D*, strap *m*, and rod *k*, in recesses *g h h'*, which allow a lateral as well as a vertical articulation of the ankle, as herein described.

Witnesses:

JOHN P. SNYDER,
PETER CHRISTER.

ABNER McOMBER.