

## **Specification of Alexander Horace Brandon : artificial leg.**

### **Contributors**

Brandon, Alexander Horace.

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A.D. 1867, 21<sup>st</sup> OCTOBER. N° 2957.

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S P E C I F I C A T I O N

OF

ALEXANDER HORACE BRANDON.

—  
ARTIFICIAL LEG.  
—

LONDON:

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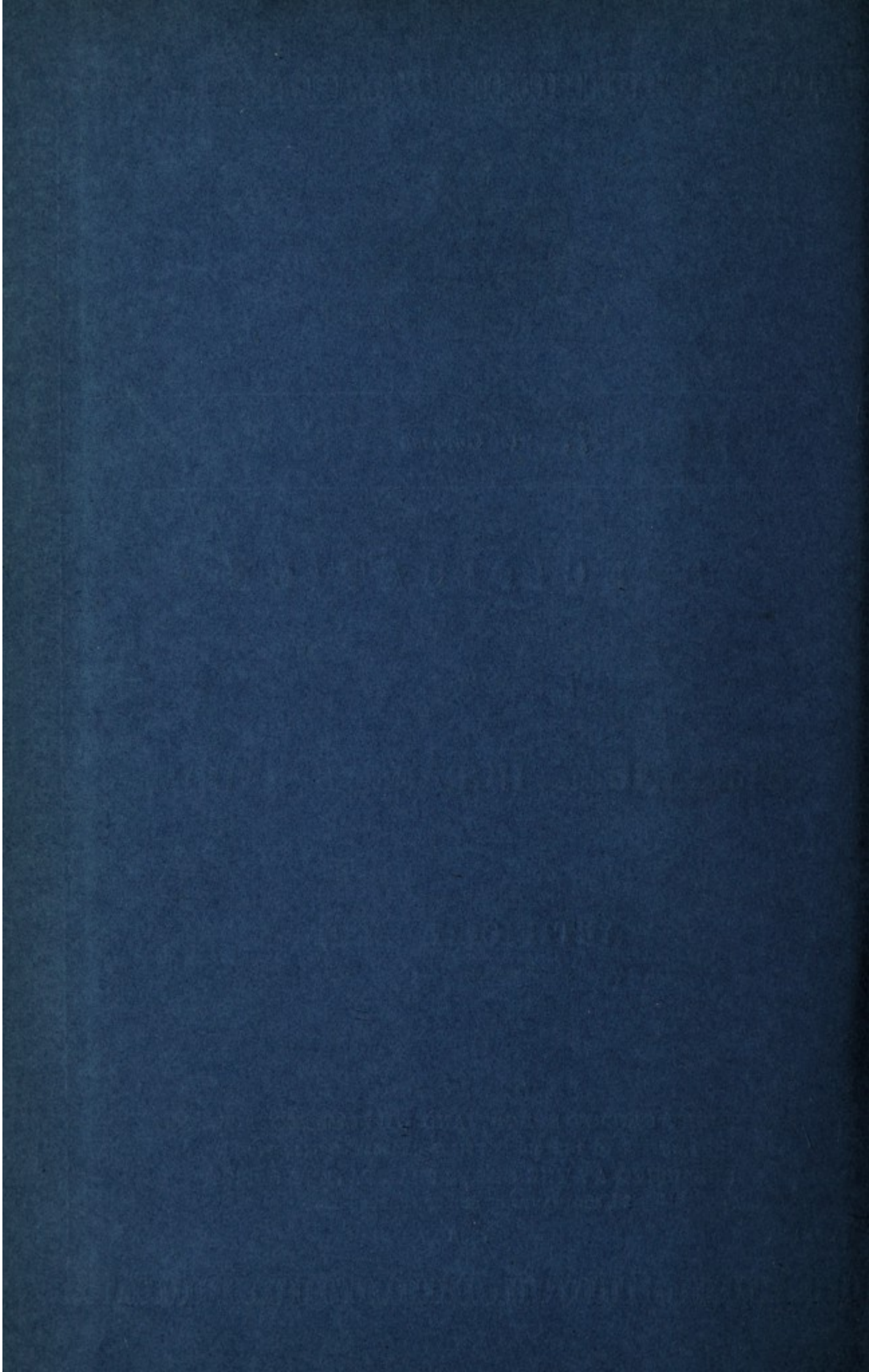
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Price 10d.

1868.









A.D. 1867, 21<sup>st</sup> OCTOBER. N° 2957.

### Artificial Leg.

**LETTERS PATENT** to Alexander Horace Brandon, Civil Engineer, of 13, Rue Gaillon, Paris, in the Empire of France, for the Invention of "AN ARTICULATED ARTIFICIAL LEG."—A communication from Doctor William Becker, residing in Paris, in the Empire of France.

Sealed the 17th April 1868, and dated the 21st October 1867.

**PROVISIONAL SPECIFICATION** left by the said Alexander Horace Brandon at the Office of the Commissioners of Patents, with his Petition, on the 21st October 1867.

I, ALEXANDER HORACE BRANDON, Civil Engineer, of 13, Rue Gaillon, Paris, in the Empire of France, do hereby declare the nature of the said Invention for "AN ARTICULATED ARTIFICIAL LEG," to be as follows:—

In the construction of the improved artificial leg I make use of an external envelope composed of a mass of hardened papier mâché, which I first coat with a solution of gum and then with a second covering made of leather, or if economy be an object this last may be of linen cloth. These envelopes are pierced with small holes in order to counteract the effects of perspiration.



*Brandon's Improved Articulated Artificial Legs.*

By this improved construction I reduce considerably the weight of the leg, which scarcely exceeds four pounds for an ordinary size, the envelope only or casing averaging about a pound and a half. Thus formed the limb presents the appearance of a masculine and well formed leg. The axles or joints forming the bend of the knee and of the instep are made preferably of copper, 5 and work interiorly with a cylindrical rotation or joint across rounds of steel bands; they are rivetted externally on a copper plate. Bands and a circle for the thigh are solidly fixed to the envelope. Steel bands are attached to the foot, and envelope it in the form of a stirrup. A heel in steel encloses the heel in walnut wood. Between the two is a leathern tongue to break the 10 shocks which might react upon the stump.

The circle and the bands are placed externally on the thigh in order not to compress the stump of the bottom of the leg, which are concealed and act in the interior.

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**SPECIFICATION** in pursuance of the conditions of the Letters Patent, filed 15 by the said Alexander Horace Brandon in the Great Seal Patent Office on the 21st April 1868.

**TO ALL TO WHOM THESE PRESENTS SHALL COME, I, ALEXANDER HORACE BRANDON, Civil Engineer, of 13, Rue Gaillon, Paris, in the Empire of France, send greeting.** 20

**WHEREAS** Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-first day of October, in the year of our Lord One thousand eight hundred and sixty-seven, in the thirty-first year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Alexander Horace Brandon, Her special licence that I, the said 25 Alexander Horace Brandon, my executors, administrators, and assigns, or such others as I, the said Alexander Horace Brandon, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom 30 of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "AN ARTICULATED ARTIFICIAL LEG," being a communication to me from Dr. William Becker, also residing in Paris, in the Empire of France, upon the condition (amongst others) that I, the said Alexander Horace Brandon, my executors or administrators, by an instrument in writing under my, or their, 35



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or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said

5 Letters Patent.

NOW KNOW YE, that I, the said Alexander Horace Brandon, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, reference being had to the Drawing hereunto annexed, and to the  
10 letters and figures marked thereon (that is to say) :—

This Invention, as communicated to me by my foreign correspondent, relates to a novel mode of constructing articulated artificial legs, whereby ample means of flexure is provided, while at the same time strength and lightness are secured and proper control over the limb by the wearer.

15 In the accompanying Drawings Fig. 1 is a side view of the improved leg ; Fig. 2 is a front view ; Fig. 3 a back view of the same ; Fig. 4, a view of the sole of the foot ; these several Figures illustrate only those parts which are most prominently presented to view when the leg is seen in front, side, back, and plan respectively.

20 Fig. 1 (the side view) shews the method of placing the springs which operate respectively the knee and ankle joints, H being the ankle joint spring and L the knee joint spring ; K is a steel plate situate at the heel to receive the pressure of the spring H ; this Figure also shows the foot with the heel (in walnut wood) T, the incision G, the knee in copper D, the splints in steel  
25 P, Q, R, and the circle or band in steel S surrounding the thigh.

Fig. 2 (front view) shews the vertical band A holding the foot like a stirrup ; it passes by B over the knee D by C and O up to the buckle, where the band can be tightened as desired. When the wearer of the leg is standing upright the band A rests on his shoulder and pulls upon the whole mechanism. The  
30 knee cannot bend when the heel is placed upon the ground. When on the contrary the person is sitting the band slips by B and C so as to permit the natural bend of the knee, which it makes by the slit in the outer leather covering.

Fig. 4 (view of the sole of the foot) shews the application to the sole of the  
35 foot of a spring plate, which by means of the articulation G (Fig. 1) bends up and down as the foot is placed upon or lifted up from the ground.

Fig. 3 (side view) shews the spring H as rivetted on a plate I which is fixed between the two splints Q of the tibia ; this spring pushes the heel K



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when the foot is put down on the ground. The spring acting upon the point of the foot it permits at the same time the bend of the ankle and the firm tread of the toes upon the ground, an advantage unknown before, for the foot advancing by direct or circular sliding movement was exposed to strike against any obstacle and cause a fall. The coiled spring L is attached at its lower end 5 by a hook to the upper end of the plate I, and at its upper end with a leather strap N, which is fixed to the thigh; it only acts when the stump of the thigh is lifted, which is fixed in the upper part (thigh) of the apparatus. By this lifting movement the stump acts upon the mechanism and produces the bend of the knee. The action of the band after the bending of the knee allows the 10 limb to be drawn into its natural position to extend the limb and to make a step in advance. From thence, and quite naturally, the weight of the body thrown forward acting upon the articulation of the foot aids the person to make another step in advance, and so on.

The exterior envelope of the limb is composed of papier mâché hardened, 15 covered with a layer of gum, and then enveloped in leather, which can be substituted by cloth when economy is an object; these envelopes are pierced with small holes V to avoid injurious action from perspiration.

The weight of the limb of ordinary size with its accessories is about four and a half pounds, or a few ounces more for a large limb; the outer covering 20 weighs barely three ounces; the whole appearance is that of a well formed muscular leg.

The axle M of the knee joint and the axle of the ankle are in brass, and work inside with a cylindrical gudgeon through the washer on the steel splints; they are rivetted outside on the brass plates. The splints Q and R and the 25 circle S of the thigh are fixed solidly in the casing. To the foot are attached steel splints, which envelope it like a stirrup. The steel heel K surrounds the walnut wood heel, and pads of leather or other suitable material are inserted between the joints to break the shock which would otherwise affect the stump when the limb was in action. On the thigh the circle and the 30 splints are placed outside, so as not to compress the stump; they go to S, where they join the splints of the lower part of the leg, which are hidden and work in the inside.

Having now explained the Invention communicated to me, and set forth the best means I am acquainted with for carrying the same into practice, 35 I wish it to be understood that under the above in part recited Letters Patent I claim, the construction of articulated artificial leg herein described (which substantially acts as the natural limb), especially the manner in which the



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articulations of the ankle and knee joint are constructed for the above purpose.

In witness whereof, I, the said Alexander Horace Brandon, have here-  
unto set my hand and seal, the Fifteenth day of April, in the year of  
5 our Lord One thousand eight hundred and sixty-eight.

A. H. BRANDON. (L.S.)

Witness,

W<sup>m</sup>. MORGAN BROWN.

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LONDON:

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Printers to the Queen's most Excellent Majesty. 1868.



articulations of the ankle and knee joint are constructed for the above purpose. In witness whereof, I, the said Alexander Thomson, have hereunto set my hand and seal, the Fifteenth day of April, in the year of our Lord (the thousand eight hundred and sixty-eight).

A. H. BRANDON. (L.S.)

Witness, Wm. Moreau Brown.

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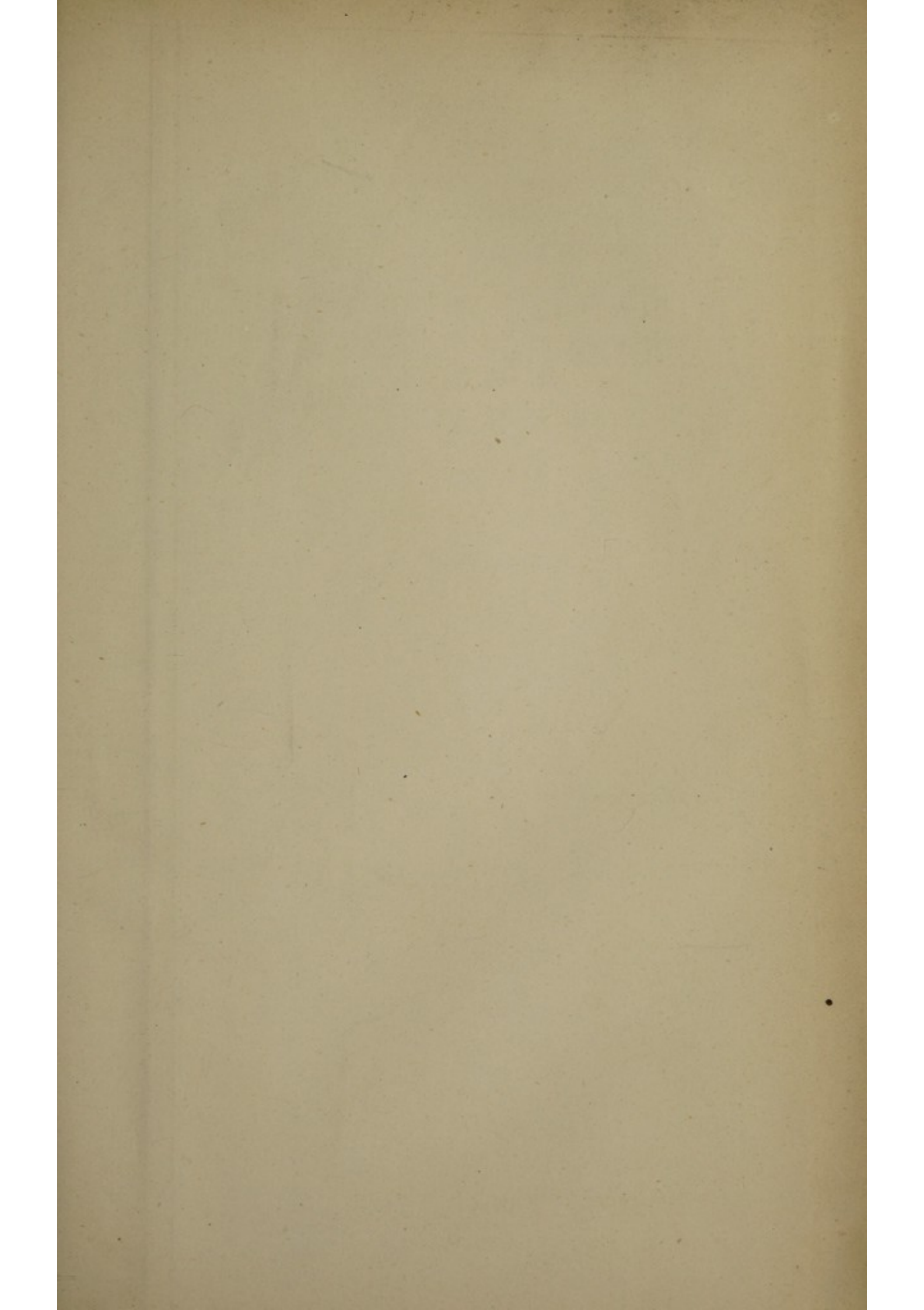
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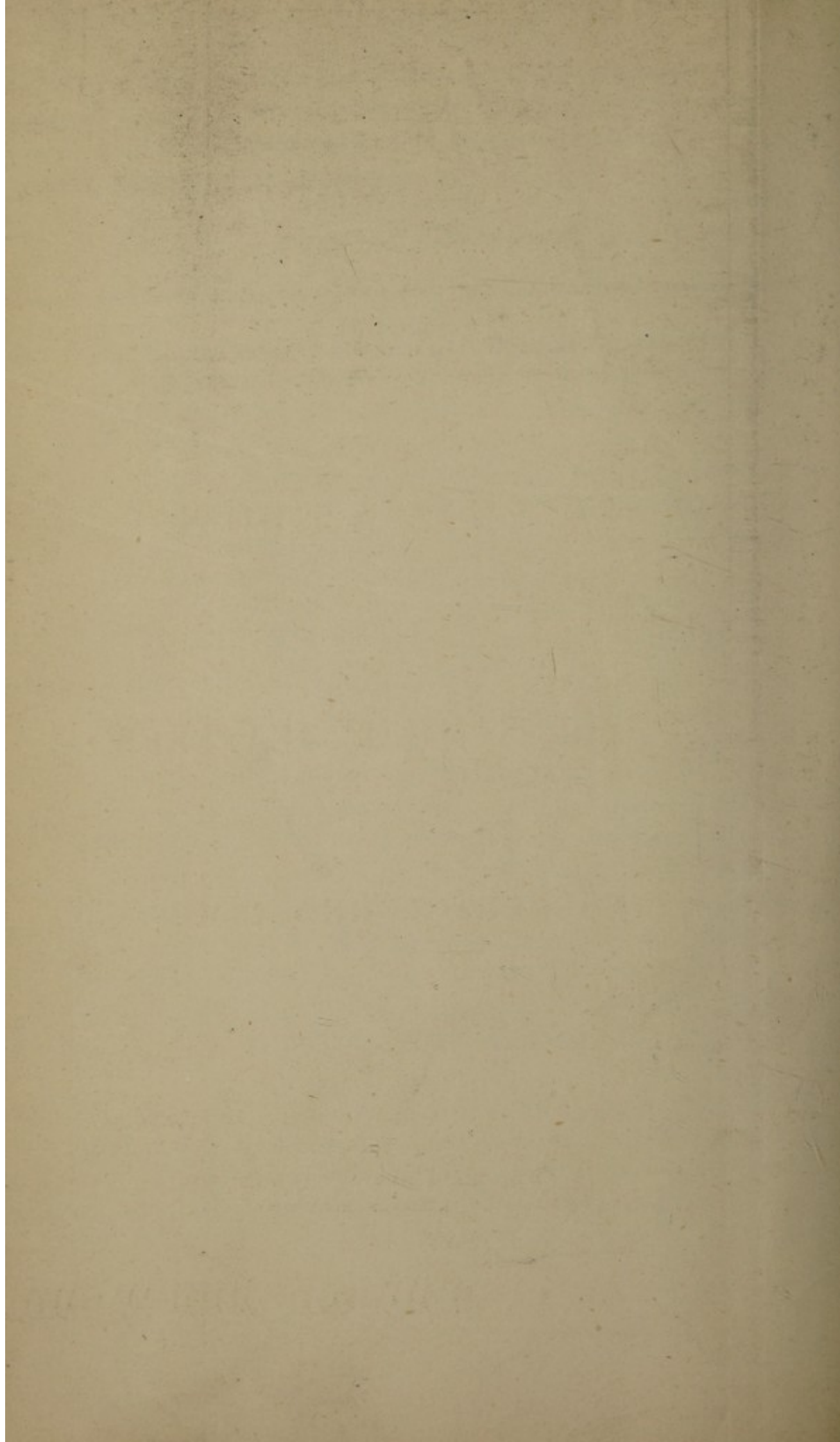




FIG. 1.

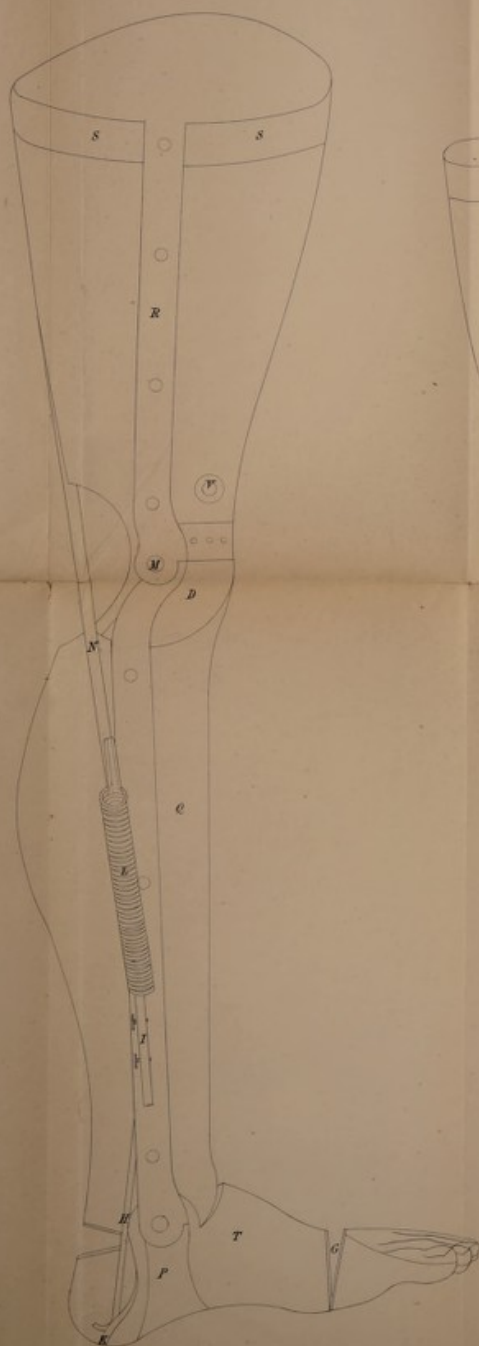


FIG. 2.

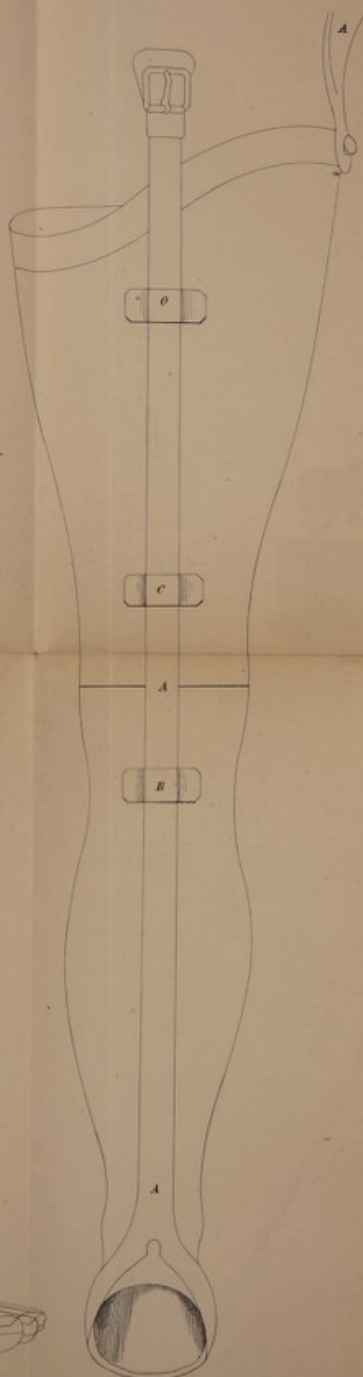


FIG. 3.

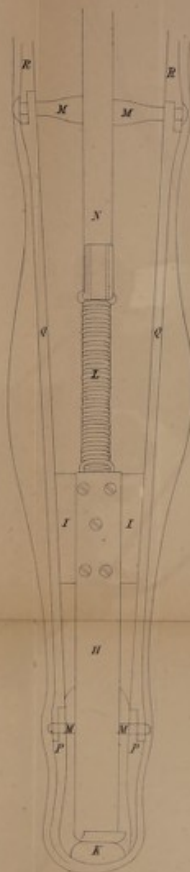


FIG. 4.



