R. M. VAUGHAN.

ARTIFICIAL LEG.

No. 41,033. Patented Dec. 22, 1863.

Fig. 1.

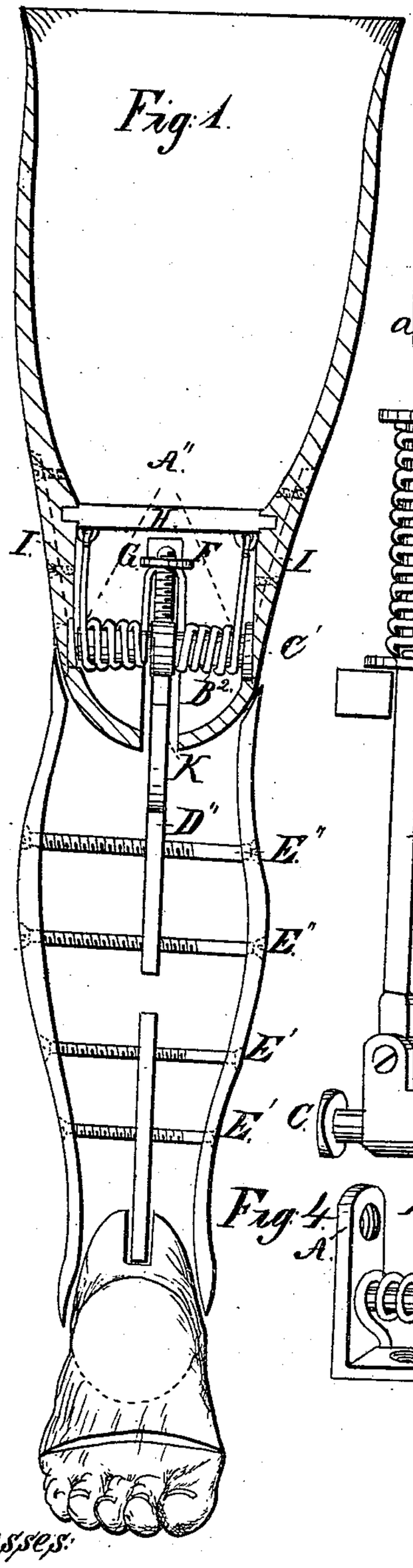


Fig. 5.

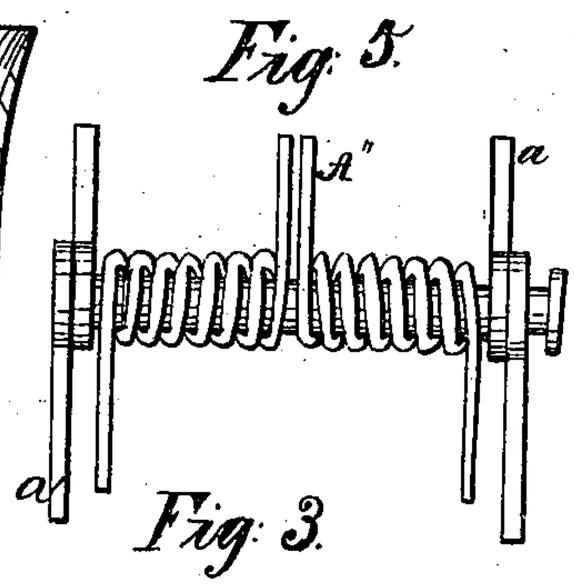


Fig. 3.

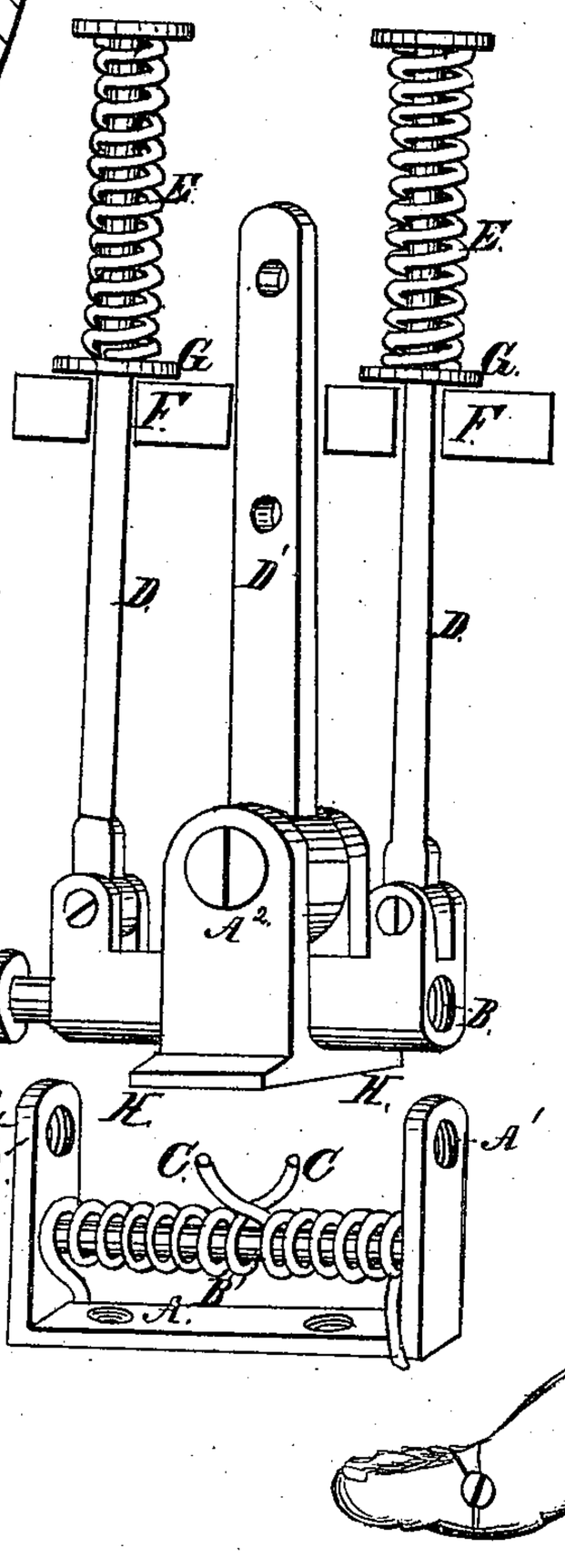
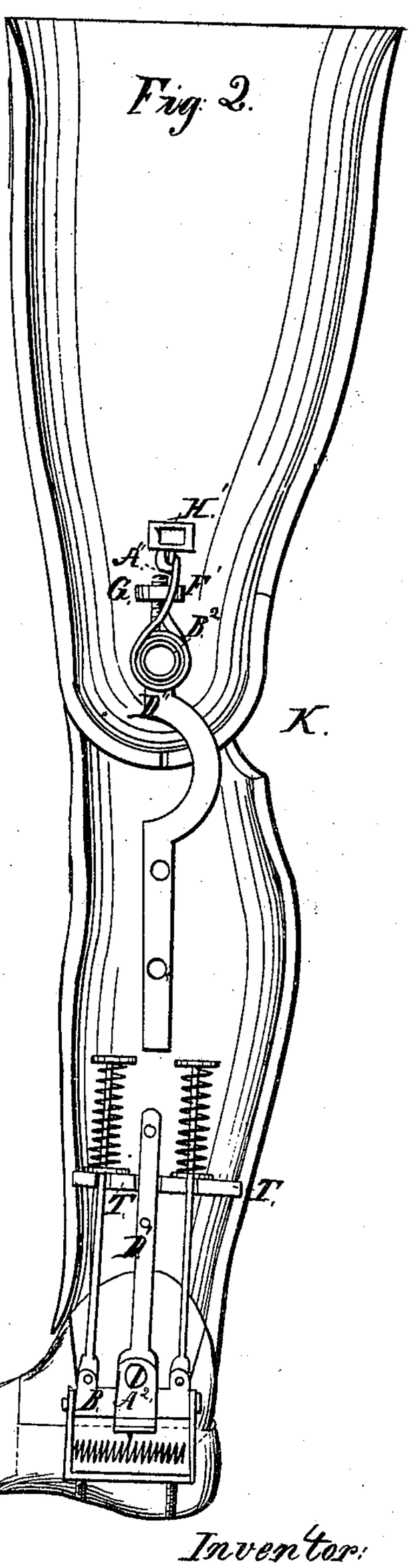


Fig. 4.

Fig. 2.



Witnesses:

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Atty

UNITED STATES PATENT OFFICE.

RICHARD M. VAUGHAN, OF GLASGOW, MISSOURI.

IMPROVEMENT IN ARTIFICIAL LEGS.

Specification forming part of Letters Patent No. **41,033**, dated December 22, 1863.

To all whom it may concern:

Be it known that I, RICHARD M. VAUGHAN, of Glasgow, Howard county, and State of Missouri, have invented a new and useful Improvement in Artificial Legs; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front, and Fig. 2 a side, sectional view. Figs. 3 and 4 represent the parts forming the ankle-joint detached; and Fig. 5 represents a portion of the knee-joint, showing the manner of applying and retracting the springs.

The same letters of reference wherever they occur denote the same part.

My invention relates to the peculiar construction, as hereinafter described, of the knee and ankle joints, whereby the necessary motions of said joints in imitation of the motions of the corresponding joints in the natural limb are secured.

In the drawings, A represents an angle-iron, having the upright portions perforated, as at A′ A′.

B is a tubular iron, which is secured between the upright portions of A by means of bolt C. The tubular iron B is furnished at either end with upright ears or lugs, to which are pivoted the vertical rods D D, which pass through perforations in the horizontal bar or plate F, which is permanently fixed in the leg some distance above the ankle-joint, as shown in Fig. 2. The upper ends of these rods D are furnished with heads or disks permanently secured thereto, and between these disks and the loose washers G, placed on rods D, and resting on plate F, the spiral springs E encircling said rods are placed, as shown in Figs. 2 and 3 of the drawings.

A^2 is a second angle-iron, similar in form to A, the upright portions of which embrace the tubular iron B, and have a vertical rod or bar, D′, pivoted to them, as shown in the drawings. This bar is perforated in its upper part, and through these perforations the rods or bolts E′ E′ are passed. These rods or bolts are firmly and rigidly secured to the leg, as shown in Fig. 1. The angle-iron A, as shown in Fig. 2, is firmly secured within a socket in the foot by screws, rivets, or otherwise, and is provided with the horizontal rod B′, which is encircled by two opposing spiral springs, as shown in Fig. 4, the ends *c c* of which bear on the opposite sides or flanges H H of the angle-iron A^2, tending thereby to keep the same always in the same relation to the iron A. From the above description it will be seen that the foot may have two motions with relation to the leg at right angles to each other—the one upon the pivot C resisted by the springs *c c*, the other, by the rocking of the tubular iron B in the angle iron A^2, resisted by the springs E, as shown. The combination of these two at right angles to each other, as described, will give the required freedom of motion to the parts.

In the construction of the knee-joints, A″ A″ represent spiral springs coiled around B″ B″, (the tube, through which the pivot C″ passes, and also through the straps *a a a′ a′*,) as shown in Fig. 5, which are secured by rivets or otherwise to the upper and lower portions of the leg.

D′ is a lever, of form shown in Fig. 2, the lower end of which is secured to the rods or bolts E″ E″. The upper end receives the tube B″, and, passing up, terminates in a screw, F, upon which nut G works, securing the short ends of coiled springs A″, which, having their other ends attached to the thigh, by means of the cross-bar H′, tend to throw the leg forward in making a step, or whenever the foot is raised from the ground.

The operation of the parts will be readily understood from the foregoing description. Those parts not particularly described may be made in the usual manner, and all the parts may be of any of the well-known materials for that purpose. Those constituting the joints, being subject to considerable friction, I prefer should be of steel.

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

1. The combination of the angle-irons A and A^2 and tubular iron B with the foot and leg of an artificial limb, substantially as and for the purpose described.

2. The arrangement of the spiral springs *c c* in combination with the angle-irons A A^2, in the manner shown and described.

3. The arrangement of the hinged rods D D in combination with the tubular iron B, plate or bar F, and springs E, substantially as described.

4. The combination of the vertical bar D′ with the angle-iron A^2 and the supporting-rods E′ E′, in the manner shown and described.

5. The arrangement of the springs A″ in combination with the tubular pivot B^2, lever D″, and bar H′, substantially as described.

RICHARD M. VAUGHAN.

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