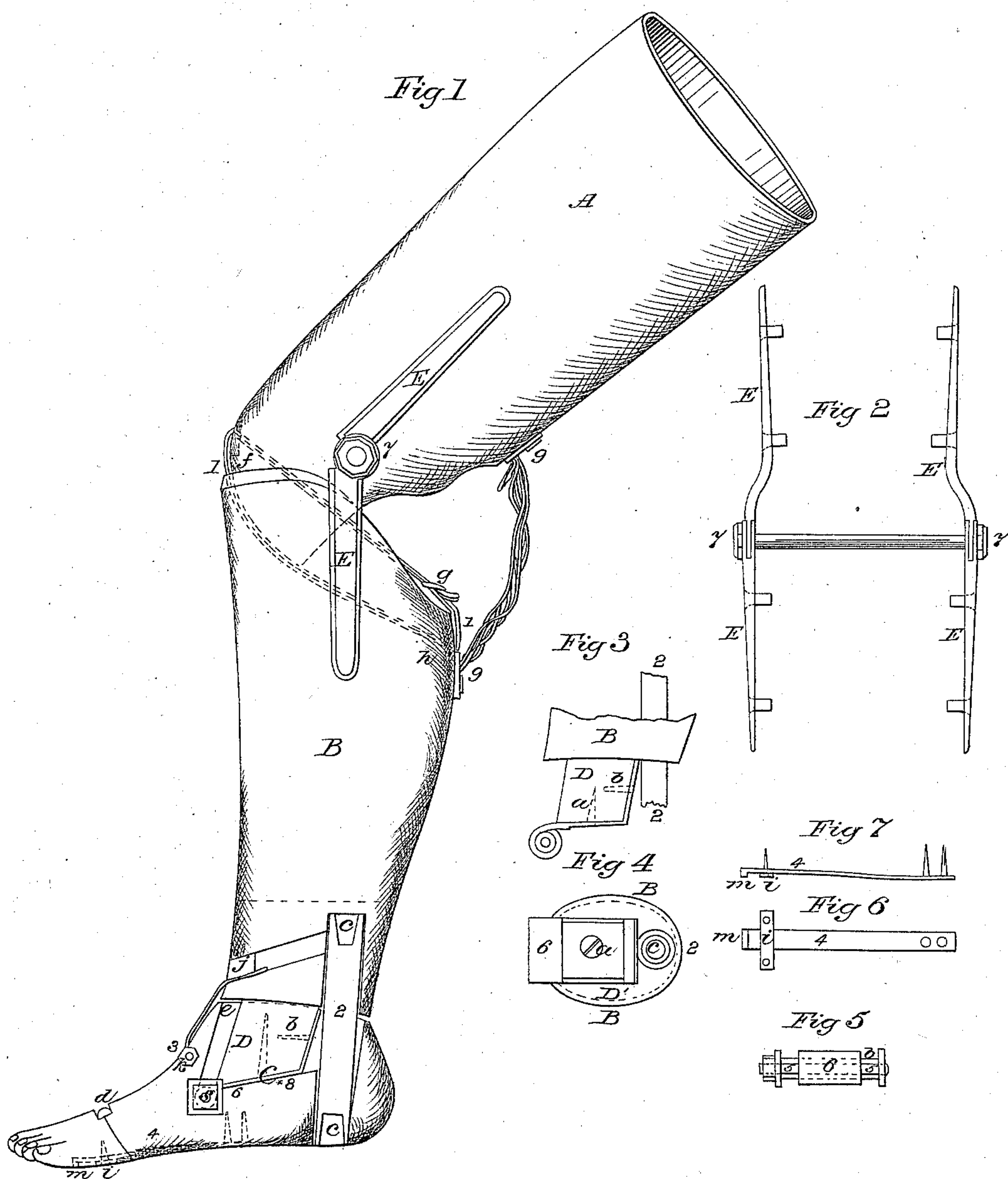


*F. Schmitt,
Artificial Leg,*

N^o 66,744,

Patented July 16, 1867.



*Witnesses:
L. L. Bondi,
C. A. West.*

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United States Patent Office.

FREDERIC SCHMITT, OF SPRINGFIELD, ILLINOIS.

Letters Patent No. 66,744, dated July 16, 1867.

IMPROVEMENTS 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, FREDERIC SCHMITT, of the city of Springfield, in the county of Sangamon, and State of Illinois, have invented certain new and useful Improvements in Artificial Legs; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure I is a side view.

Figure II, a detached view of the iron knee-joint.

Figure III, a side view of the ankle-joint detached.

Figure IV, a bottom view of the ankle-joint detached; also, the fastening of the heel-cord.

Figure V, a front view of ankle-joint detached.

Figure VI, a top view of the spring of the toe-joint detached; and

Figure VII, a side view of the same.

Like letters or figures refer to the same parts in all of the figures.

Heretofore artificial legs have been so complex in their construction that when broken or out of order they could only be repaired by persons skilled in the art of constructing them, so that in effect their use was confined to large cities, where such mechanics could be found, as by constant use they soon become disordered, and are liable to many accidents; or else they were made so heavy and clumsy as to be comparatively valueless, and not worn upon ordinary occasions, or were entirely discarded. The light ones, by reason of their being so complex, are also very expensive. All of these difficulties are overcome by me, as my leg is light, durable, and those parts subject to much wear easily replaced by the wearer, and they can be made by any good mechanic.

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

The parts A B are made of veneering or other thin strips of light, tough wood, with fine, strong linen placed between the layers, secured by glue or other suitable substance, which makes them light, strong, and somewhat flexible, and gives them an easy fit to the part of the leg to which they are attached. They are made in size and length to fit the person for whom they are designed, and for heavy persons three layers of wood and three of linen will be found sufficient, while for light persons two of wood and two of linen will give the required strength. The lower end of A is curved in front so as to fit into and turn in B, without leaving an open space when bent. They are hinged together or pivoted by riveting, or otherwise fastening the bars E to their sides, which bars are connected together by a rule-joint and rod, 7, which runs through and forms the pivots for both joints. This rod and the rule-joints are located centrally, as shown. An India-rubber band, 1, is passed through the opening *f* of the knee, and down around the end of A, through a similar opening, *h*, in the calf of B, where it is buckled at *g*, or secured by other adjustable fastening, so that the tension can be varied, and make the knee-joint very flexible or comparatively rigid, as may be desired. This strap 1 forms the spring of the knee-joint, and will prevent the leg from turning too far in the direction indicated in Fig. II. In order to prevent it from turning too far in the other direction, and to prevent the noise or unpleasant sound which would occur if I depended upon the shoulders of the rule-joint 7 entirely, I attach one or more cords 9 to the back side, which are attached by any suitable method, so as to take the strain just before the shoulders of the joint come in contact; but if they should become loose, or for any cause fail to act, then the rule-joint will hold it, so that no accident can occur therefrom. At the lower end of B I insert a block, D', or filling, which makes the lower end solid. This block or filling has a tenon, D, extending down into a suitable mortise in the foot C, about halfway through it. The lower and back sides of this tenon are covered by the plate of steel or other suitable metal 6, and is fitted at the lower end at an angle, as shown, and at its front end is curved or bent so as to form a joint with the cross-rod 5, as shown in Fig. V, which cross-rod extends through the foot, and has a buckskin or rubber lining or covering *l*, so as to prevent noise and avoid frequent lubrication. This forms the pivot of the ankle-joint, and is located near the centre of the foot, as respects its length. I consider this central location important, as it gives the leg a firm support and the foot an easy movement. The heel is supported and operated by the rubber-spring 2, which is made of rubber-hose or pipe, and is secured in place by the keys or wedges *c*, driven or pressed in at the top of the block D' and the bottom of the heel, as shown, a suitable hole being

previously made through the foot C and block D'. If it is desirable to elevate the toe when the step is being taken, then the spring 2 may be made of compressed rubber or other suitable material, so as to throw the heel down. The front part of the foot is supported by the spring 3, also made of rubber or prepared rubber cloth, and wedged into a suitable hole at its upper end by the wedge *j*, and secured at its lower end by the cross-bar or band *k*. This arrangement gives the foot an easy movement, and it is prevented from going too far by the front *e* of the mortise, into which the tenon D is inserted. The toe-joint is formed by the hinge *d*, located on the upper side of the foot, and controlled by the steel spring 4, which is embedded in the bottom of the foot, and firmly attached to it at its rear end. Its front end is bent down so as to form the hook or stop *m*, so that by means of a cross-bar, *i*, which is attached near such hook or stop, and across the spring, the joint is prevented from yielding beyond the fixed point *m*, for when the cross-bar *i* comes in contact with *m* the joint will not bend or open any further, and when relieved from pressure the spring will return the toes to their original position. The foot part is made solid, except as cut and mortised, as indicated. The joint of the ankle may be made partly of the ball-and-socket form, and covered, so as to prevent the hose, when worn, from being caught and cut or injured by the action of the joint.

The operation will be apparent from the description.

The nature of my invention consists in constructing the upper and lower portions A and B, or either of them, of alternate strips of thin wood and cloth, suitably fastened together; in providing the knee-joint with an adjustable rubber or other spring, to support it and return it to its original position; in supporting the lower part of the leg upon a joint located centrally; in the manner of attaching the spring 2 by the wedges *c*; in confining the movement of the toe-joint by means of a lock or stop at the end of the spring 4, and in the several combinations herein set forth and claimed.

Having thus fully described my artificial legs, what I claim as new, and desire to secure by Letters Patent, is—

1. Constructing the upper and lower portions of an artificial leg A and B, or either of them, of alternate strips of thin wood and cloth, substantially as and for the purposes specified.
2. The pivot 5 of the ankle-joint, when located centrally as respects the length of the foot, and constructed and operating substantially as specified.
3. The combination and arrangement of the tenon D, plate 6, hinge-rod 5, and springs 2 and 3, with the foot C and lower portion of the leg B, forming the ankle-joint, when constructed and operating substantially as specified.
4. The combination and arrangement of the spring-strap 1, knee-opening *f*, calf-opening *h*, rule-joint 7, and the cords or lacing 9, with the upper portion A and lower portion B of the leg, forming the knee-joint, when constructed and operating substantially as and for the purposes specified.

FR. SCHMITT.

Witnesses:

L. L. BOND,
E. A. WEST.