

*Artificial Leg.*

*Patented Aug. 29, 1865.*



W. Haupp  
E. Haupp

Anton Mennel

# UNITED STATES PATENT OFFICE.

ANTON MENNEL, OF NEW YORK, N. Y.

## IMPROVEMENT IN ARTIFICIAL LEGS.

Specification forming part of Letters Patent No. 49,645, dated August 29, 1865.

### *To all whom it may concern:*

Be it known that I, ANTON MENNEL, of 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 of the same, which will enable those skilled in the art to make and use it, reference being had to the accompanying drawings, forming part of this description, in which—

Figure 1 represents a longitudinal vertical section of this invention when the leg is stretched. Fig. 2 is a similar section of the same when the leg is bent and in the position to take a step.

Similar letters of reference in both views indicate corresponding parts.

This invention consists in extending the lower end of the artificial tibia below the edge of the artificial foot to such a distance that by the same a positive stop is formed, whereby the ankle-joint is rendered rigid as soon as the leg reaches an upright position, and the wearer of the leg is enabled to take a step with perfect safety, and without danger of losing his balance when his entire weight is thrown on one leg while the other leg is lifted for the next step. This stop strikes against the inner surface of the artificial heel, which is made particularly strong to prevent its being forced out, and the force of the blow of the stop against the inner surface of the heel is softened down by interposing an elastic pad of india-rubber or other suitable material. The knee-joint of this artificial leg also presents some novel features, as far as the position of the spring is concerned. This spring extends from the back part of the shell of the artificial thigh, over the fulcrum-pin of the knee-joint, to a pin or rod which is situated below the fulcrum-pin, parallel with the same and slightly in front of it, in such a manner that the power of the spring nearly ceases to act when the knee-joint is straightened out, and all blows are avoided, which, with ordinary knee-joints, result from the spring bringing the thigh part up with considerable force against the upper end of the leg or the inner part of the joint.

A represents the shell of my artificial leg, which is made of thin strips of wood glued together, so as to cause the fibers of the wood to cross each other, whereby great strength is obtained with the least possible weight, though

it must be remarked that the mechanism which forms the subject-matter of this present invention is applicable to shells of any desirable construction.

The artificial thigh B is connected with the leg C by the knee-joint D, and the leg connects with the foot E by the ankle-joint F. This joint is formed by a pin, *a*, which passes through the sides of the leg and those of the foot, and these sides are strengthened by metal plates secured to them in any suitable manner. The leg, or, more properly speaking, the artificial tibia, extends down below the edge of the foot and nearly to the sole to form a positive stop, *b*, and when the leg takes a step and is brought up from the position shown in Fig. 2 to that shown in Fig. 1, said stop strikes the inner surface of the artificial heel *c*, and thereby the position of the leg is rendered safe, and the wearer of the leg runs no risk of losing his or her balance while taking a step with the other leg. The great importance of this stop is apparent from the fact that my first experiments made therewith have been unsuccessful because the heel was forced out, and not until I had made the same with peculiar strength and care did it resist the action of the stop. Said stop comes up against the heel with great force at every step, and in order to soften the blows I have applied an elastic pad, *d*, to the stop, as clearly shown in the drawings. This pad is made of india-rubber or other suitable material, and it may be fastened to the stop, as shown, or to the inner surface of the heel, if desired.

A spring, *e*, serves to raise the toes from the ground whenever the foot is raised for a new step. This spring is secured by means of a pin, *f*, in the lower end of the leg C, and it is adjustable from below by a strap, *g*, which extends round a pin, *h*, placed in a recess in the sole, the length of said strap being adjustable by a buckle or any other suitable means. This spring is short, cheap, and light, and it fulfills its function with the best possible effect.

The knee-joint D is produced by a pivot, *i*, which passes through the sides of the thigh B and of the leg C, and these sides are strengthened by metal plates or brackets secured there-to by screws, or in any other suitable manner.

The spring *j*, which serves to straighten out the knee-joint, whenever the leg is brought in the proper position to allow this, is secured at

its upper end to a strap, K, provided with several holes which can be made to hook over a stud, *l*, projecting from the inner rear surface of the thigh B. The lower end of said spring is fastened to a rod or pin, *m*, which is situated slightly in front and somewhat below the fulcrum-pin *i* of the knee-joint, and extends through the sides of the leg C, parallel to said pin *i*. When the leg is straightened out this spring presses very light against the fulcrum-pin, and its power is nearly spent, so that the outer part of the knee-pan comes up with a very light blow against the upper portion of the leg, and every disagreeable effect resulting from such blows is avoided. As soon as the knee-joint is bent the spring bears hard against the fulcrum-pin *i*, it is strained, and it exerts the necessary power to straighten the leg whenever it is permitted to do so. By changing the strap *k* from one hole to the other, or the stud *l*, the power of the spring can be regulated. By this arrangement of the pin *m* parallel to fulcrum-pin *i* the power of the spring is properly regulated, and, furthermore, the

shell of the leg is braced without causing any perceptible increase in its weight.

By the great simplicity of my mechanism, and by the peculiar construction of the shell of my leg, I am enabled to construct legs cheap, strong, durable, and light, which is the great desideratum of persons compelled to wear the same.

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

1. The stop *b* in the ankle-joint, produced by an extension of the artificial tibia, and applied substantially as and for the purpose set forth.

2. The arrangement of the pin *m*, situated below and somewhat in front of the fulcrum-pin *i* of the knee-joint, in combination with the spring *j*, substantially as and for the purpose described.

ANTON MENNEL.

Witnesses:

W. HAUFF,  
E. HAUFF.