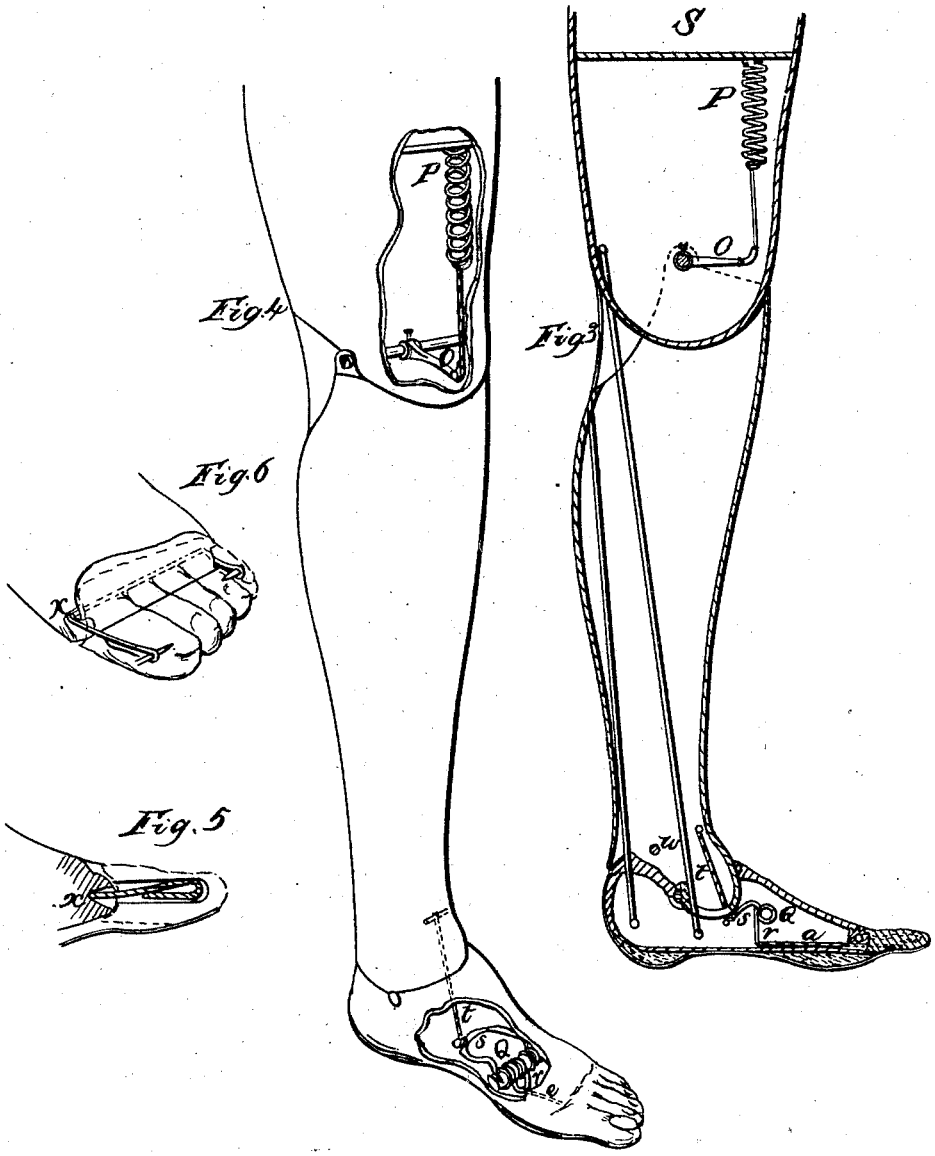
B. F. Palmer,

Artificial Leg.

No. 6,182. Patented Feb. 20, 1849.



UNITED STATES PATENT OFFICE.

BENJN. F. PALMER, OF MEREDITH, NEW HAMPSHIRE.

ARTIFICIAL LEG.

Specification of Letters Patent No. 6,122, dated February 20, 1849.

To all whom it may concern:

Be it known that I, BENJAMIN F. PALMER, of Meredith, in the State of New Hampshire, have invented sundry 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, which form a part of this specification.

First, to the knee bolt of my artificial leg, in the interior of the limb, I fasten an arm O Figures 3 and 4 which is in a horizontal position, (usually pointing to the front) when the lower part of the limb is in a vertical position. To the projecting end of this arm O is fastened, by means of a gut-cord, or otherwise, a coiled spring as shown at P; or in lieu of the coiled spring an elastic substance, strap or cord, or an elliptic spring may be used. The end of this spring not attached to the gut-cord is fastened, in any convenient manner, to the part of the limb above the aforesaid arm, and at any convenient distance from it, dependent upon the place at which the natural limb has been amputated, but always at such a point that the cord which connects it with the arm O, shall be at right angles with that arm, when the limb is extended, but in a line parallel with it when the limb is flexed to a right angle at the knee joint. Thus arranged, it facilitates the motion about the articulation, in cases where the stump of the natural thigh is short, but will not act upon the foot and leg so as to throw them forward, when the wearer wishes them to remain flexed at the knee. The strain on the spring P may be increased or diminished by means of a cord fastened to the upper end, which may unite it to the socket, S which receives the stump of the amputated leg.

Second. In lieu of the elliptic spring in the bottom of the foot as represented at *k* in my original specification and drawing Fig. 2, I now use a coiled spring Q Figs. 3 and 4 wound around a bolt *q*. This spring is formed by looping a piece of wire at the center to form an arm *r*, of the spring, projecting downward and on the posterior side of the bolt *q*. The two ends of the wire thus looped are then wound around the bolt *q* (one on each side of the central loop,) until a sufficient number of turns has been made; they are then brought from below upward on the posterior side of the bolt, where they are recurved downward as seen at *s*, then bent toward each other and twisted together forming a loop to which is connected the gut cord *t*. The office of this posterior arm *s* of the spring Q is to elevate the front part of the foot while that of the arm *r* extending downward as above described, is intended to depress or extend, by means of the cord *e*, the toes when flexed upward as in treading with the front part of the foot.

Third. I place near the part of the artificial leg corresponding with the ankle joint a bolt represented at *w* Fig. 3 which bolt serves as a stop to the heel when elevated to its greatest height. The said bolt or stop is so placed as not to interfere with the cord of the heel F as seen in Fig. 2 of my original specifications.

Fourth. I form the concavo-convex joint of the toes in my improved artificial leg in the following manner. At the point *x* Figs. 3 5 and 6, a horizontal hole is bored quite across the foot, through which is passed a wire, each end of which is then bent forward at right angles, and in cavities on the sides of the foot widening outward to allow of a slight motion of the two ends of the wire up and down. Through the artificial toe piece are bored two holes to receive the two ends of the wire just described. These holes run horizontally or parallel with the directions of the toes, nearly to their extremities. The ends of the wires are then bent downward and recurved backward over a pivot or pivots passing across the toes, and the ends are depressed into, and retained in grooves formed in the under side of the toe-piece to receive them, as seen in Figs. 5 and 6.

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

1. The combination of the horizontal arm with the knee bolt, connected with a cord and spring in such a manner as to possess a varying tendency to extend the flexed limb according to the position of the same, substantially as herein specified and described.

2. I claim the use of a combination of the double-coiled recurved foot spring, with a

bolt and with downward and backward projecting arms, acting at once to flex the foot and to extend the toes, as herein set forth.

3. I claim the use of a combination of the stop bolt, with a movable heel as herein specified.

4. I claim the manner herein described of connecting the toe-piece with the foot, when the said toe-piece is operated on by the cord *e* and spring Q to extend it in the manner and for the purposes herein set forth.

BENJ. F. PALMER.

Witnesses:
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