

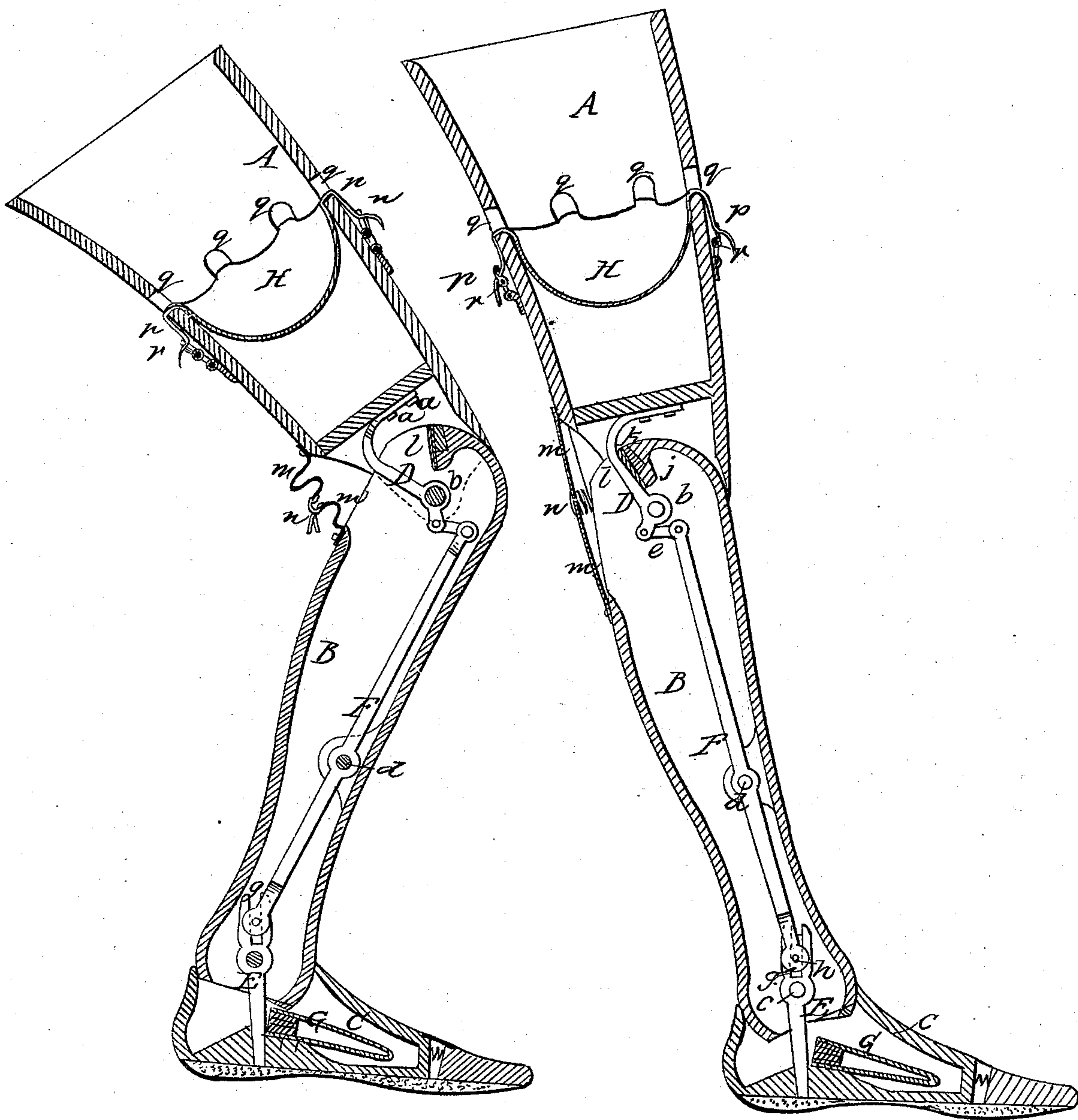
O. D. Wilcox,
Artificial Leg.

N^o 21,289.

Patented Aug. 24, 1858.

Fig. 1.

Fig. 2.



UNITED STATES PATENT OFFICE.

OLIVER DAVID WILCOX, OF ELMIRA, NEW YORK.

ATTACHMENT TO ARTIFICIAL LEGS.

Specification of Letters Patent No. 21,289, dated August 24, 1858.

To all whom it may concern:

Be it known that I, OLIVER DAVID WILCOX, M. D., of Elmira, in the county of Chemung 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, reference being had to the accompanying drawings, making part of this specification, in which—

Figures 1, and 2, are longitudinal sections of an artificial leg with my improvements.

Similar letters of reference indicate like parts in the two figures.

This invention consists, in providing for the adjustment of the sack which forms part of the subject matter of Letters Patent granted to me Sept. 30th, 1856, to adapt it to the condition of the stump, by means of straps and buckles applied substantially as hereinafter described.

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

A, is the thigh piece; B, the leg, and C, the foot, all made of wood, hollow and as light as possible. These may be fitted together with mortises and tenons or with flange joints, in the same manner as in artificial limbs heretofore used.

D, is a short lever of the first order, having one arm secured rigidly by screws *a, a*, or otherwise, to the thigh piece. This lever passes through a slot *l* in the top of the leg which is hollow, and has for its fulcrum the knee-joint pin *b*. E is another short lever of the first order, having one arm secured rigidly to the foot by being driven tightly thereinto or by other means, having for its fulcrum the ankle-joint pin *c*, and having its other arm extended upward into the leg.

F, is a lever of the first order, of nearly the full length of the leg B, arranged within the leg, having for its fulcrum a pin *d*, which is stationary within the leg, and having its lower arm somewhat shorter than the upper one. The upper arm of this lever F is connected with the lower arm of the lever D, by a link *e*, which makes as nearly as possible a rectangular connection between said levers. The lower arm of the said lever F, is forked to receive a small sliding block *g*, which is pivoted to it by a pin *n*, and which is fitted to slide in a slot in the upper part of the lever E.

j, is a block of hard wood secured in the

front of the slot *l*, in the top of the leg and fitted with a piece of india-rubber *h*, which is faced with a piece of leather. This block cushioned with india-rubber serves as a stop to the upper arm of the lever D, to stiffen the knee joint when it is straightened.

m, m, are two pieces of leather, one attached to the thigh piece A, and the other to the leg B, to cover the back of the knee-joint. These pieces are laced together by a lace *n*, which causes such a degree of tension to be produced on them, as the joint is straightened, as to prevent the lever D coming violently in contact with the stop, *j*, R.

G, is a spring applied within the foot and secured thereto in such a manner that the lower part of the front of the leg will be caused to press upon it by the flexure of the ankle joint, and thus give elasticity to said joint in stepping.

The operation of the levers D, E, F, is as follows:—As the knee is flexed by moving it forward in walking, the lower and shorter arm of the lever D by means of its link connection *e*, throws forward the upper arm of the lever F, and throws back the lower end of the latter, which by its slot and slide connection with the lever E, causes the foot to move from the ankle joint and the toe to be elevated relatively to the leg so that it may clear the ground when the foot is raised therefrom and moved forward. The raising of the toe is continued by the flexure of the knee till the point of connection of the link *e*, with the lever D, passes in front of the knee-joint pin *b*. It is, however, only in sitting down, and not in walking, that the flexure is sufficient for this; but in walking, the flexure is sufficient to cause the elevation of the front part of the foot to such a degree as to cause the spring G, to be considerably compressed by the lower part of the leg; and when the foot is raised from the ground, the force of said spring is exerted in throwing down the foot and transmitted from the foot through the levers E and F, to throw the foot and leg forward from the knee-joint. Though before the foot is brought to the ground the spring G is relieved, the continued forward motion of the leg and foot from the knee joint, produced by the voluntary motion of the wearer's thigh causes the levers D, F, E, to operate in a manner the reverse of what they did during the act of flexing the knee, and thus to move the toe downward to a position relatively to the leg

to come flat to any ordinary surface of ground when it is set down. This connection of the foot, leg, and thigh produces a very close imitation of the movements of
5 the natural leg.

H, is the sack which receives the stump of the natural limb. When this is fixed, some difficulty is found in making it produce an equal pressure on all parts of the stump,
10 which is very necessary to the comfort of the wearer; and again, nearly all stumps continue to shrink so that they settle down in the socket of the thigh piece A, and consequently the sack requires to be raised from
15 time to time. For this purpose I suspend the sack from several straps *p, p*, which pass

through openings *q, q*, provided in the sides of the thigh-socket and down to buckles *r, r*, secured to the outside of the thigh. By this means, it is obvious, that the adjustment of
20 the whole or any portion of the sack is provided.

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

Providing for the adjustment of the sack
H, by means of straps and buckles, applied
25 substantially as described.

O. D. WILCOX.

Witnesses:

S. C. REYNOLDS,
R. KING.