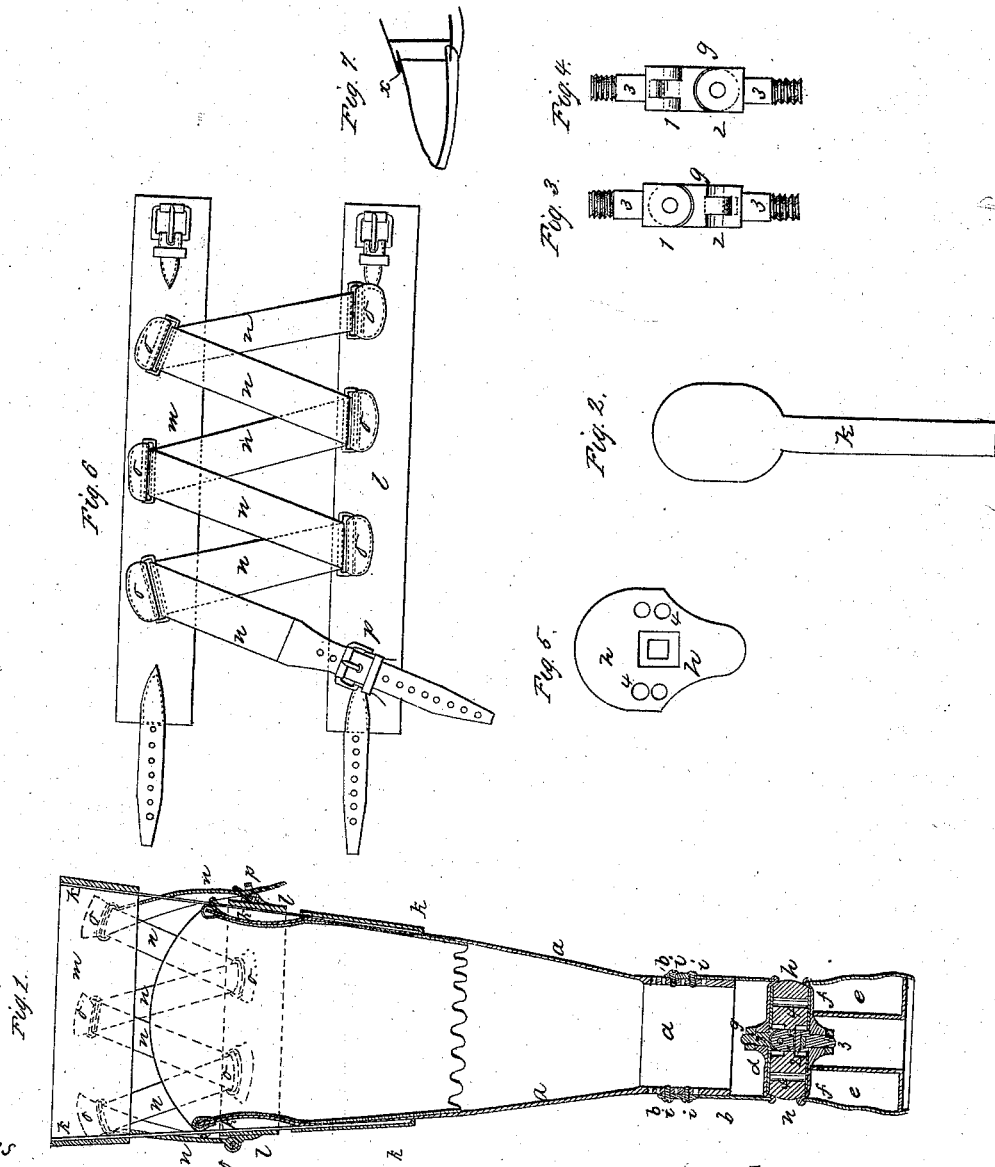


Weston & Stanley

Artificial Leg.

N^o 48,138.

Patented June 6, 1865.



Witnesses

Thos. Geo. Hard
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UNITED STATES PATENT OFFICE.

JAMES W. WESTON AND THOMAS B. STANLEY, OF NEW YORK, N. Y.,
ASSIGNORS TO JAMES W. WESTON, OF SAME PLACE.

IMPROVEMENT IN ARTIFICIAL LEGS.

Specification forming part of Letters Patent No. 48,138, dated June 6, 1865.

To all whom it may concern:

Be it known that we, JAMES W. WESTON and THOMAS B. STANLEY, of the city and State of New York, have invented, made, and applied to use a certain new and useful Improvement in Artificial Limbs; and we do hereby declare the following to be a full, clear, and exact description of the said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a vertical section of a limb with said improvements; Fig. 2, one of the side pieces at the knee. Figs. 3 and 4 are elevations of the ankle-bolt. Fig. 5 is a plan of the ankle-spring; and Fig. 6 is an elevation of the attaching-band that connects the limb to the wearer's leg at the knee-joint.

Similar marks of reference denote the same parts.

The nature of our said invention consists in a peculiar construction of bolt for connecting the foot to the limb at the ankle-joint; also, in an india-rubber spring made to set between the foot and limb, and perforated with holes to render said rubber less rigid at particular places, so that the foot will yield to inequalities of the surface stepped upon in a manner corresponding to the natural foot. We also employ knee-pieces or side-supports extending from the artificial limb to the sides of the natural knee-joint, the object being to relieve the stump below the knee of sudden strain or wrenching consequent upon any movement of the artificial limb, these side pieces being light and effective, and taking the place of the expensive and heavy hinged side irons that have usually heretofore been employed; and we attach the artificial limb to the natural leg at the knee by bands above and below the knee-joint, with a strap laced from one to the other.

In the drawings, *a* represents the sheet-metal socket for the stump of the leg, which socket may be of greater or less length, according to the point at which the leg is cut off, and said socket might be of wood or formed in any desired manner, as the same forms no part of our invention.

b is a metal case surrounding the lower end of the socket *a*, with screws *i* passing into nuts or screwed holes attached to or formed with the socket *a*. These holes are made in

a row, so as to allow the socket to be lengthened or shortened, as required; and in cases where the socket is formed of wood the said screw-holes are to be formed in a strip of metal attached to the said socket. The lower end of the case *b* is provided with a bottom piece, *d*, and a corresponding piece, *f*, is employed as a cap for the foot at the ankle. The foot itself is to be formed in any usual or desired manner. We have shown a portion of said foot at *e*. Between the parts *d* and *f* the rubber spring *h* is introduced, which yields to allow the foot to accommodate itself to the surface stepped upon. As the ankle should yield more easily at the sides than it does at the front and back portions, I make cavities or holes in the rubber *h*, as seen at 4 4, in order that there may be less rigidity in said rubber at the particular part. Experience will demonstrate the position, size, and number of these holes or cavities that may be required for each individual, according to their weight and the peculiar mode of stepping with the natural foot, so that the artificial foot may move as nearly as possible with the same elasticity of tread as the natural foot it is to accompany.

In order to connect the foot to the socket we employ a bolt, *g*, having two squared ends, 3 3, entering similarly-shaped holes in *d* and *f*, and nuts are provided, as seen in Fig. 1, to hold the parts together, so that the foot cannot turn horizontally and become misplaced in walking, &c. To allow motion at the ankle in the direction before named, we make two joints in the bolt *g* at right angles to each other, as seen at 1 and 2. When the person is walking the joint 2 moves as the heel and toe alternately touch the ground. If the surface stepped on is uneven, the joint 1 will allow the foot to conform thereto. These joints 1 and 2 in the bolt *g* may be made as a tongue between two jaws, as shown; or half-lapped joints may be employed.

The upper end of the stump-socket *a* is to be padded or formed in any usual manner for receiving the stump, and on each side thereof the knee-pieces *k* are fitted. These may be formed of light, strong wood and firmly connected at their lower ends to the stump-socket *a*, and projecting above the same a sufficient distance to come up on each side of the knee-joint of the wearer. The upper ends of these

side pieces, *k*, should be rounded, as seen in Fig. 2. These side pieces, *k*, setting closely against the sides of the knee-joint, effectually prevent any unpleasant twisting or wrenching of the stump by the artificial limb when in use, because these side pieces transfer any such strain from the tender stump to the knee-joint.

To secure our artificial limb in place we employ a double band, as shown in Figs. 1 and 6. In these *l* is a strap to buckle around the upper end of the artificial limb, and *m* is a similar strap to surround the natural limb above the knee-joint. *n* is a strap or webbing attached at one end to *l*, and laced up and down through loops *o o*, and drawn up with the requisite tension through the buckle *p*. The object of this arrangement is to draw the artificial limb up over the stump with the requisite force to attach it firmly, and at the same time, by the lacing or webbing passing through the loops *o*, the attachment is still firm and comfortable when the knee is bent in sitting down, because the said lacing or webbing draws through the loops, giving greater distance between the bands or straps *l* and *m* in the front, and taking up the slack of said webbing caused by *l* and *m* being nearer together at the back.

In the construction of the feet of artificial limbs out of sheet metal, the toes are separated and hinged on or otherwise connected, and the sheet metal of the toe-piece runs under the sheet metal of the body of the foot. This is not our invention, but we introduce at this point a guard-strip of sheet-steel attached to

the front edge of the foot-piece, which sheet steel takes the wear consequent upon the motion at this point, and prevents the edge of the soft sheet metal composing the foot turning up at said edge. This strip of steel is shown at *x*, Fig. 7.

What we claim, and desire to secure by Letters Patent, is—

1. A bolt formed with two joints at right angles to each other, and secured to the leg and foot respectively, as set forth, so that the foot cannot turn out of its place, but motion is allowed at the ankle, as specified.

2. The india-rubber block, perforated with holes, or formed with cavities at those points where the spring is required to be the most yielding, the same being introduced at the ankle-joint, as specified.

3. The side knee-pieces extending from the artificial limb, as and for the purposes set forth.

4. The band for attaching the artificial limb, consisting of the straps *l* and *m* and intermediate laced strap or webbing, *n*, for the purposes, and as specified.

In witness whereof we have hereunto set our signatures this 28th day of December, 1864.

JAMES W. WESTON.
THOMAS B. STANLEY.

Witnesses:

THOS. GEO. HAROLD,
CHAS. H. SMITH.