

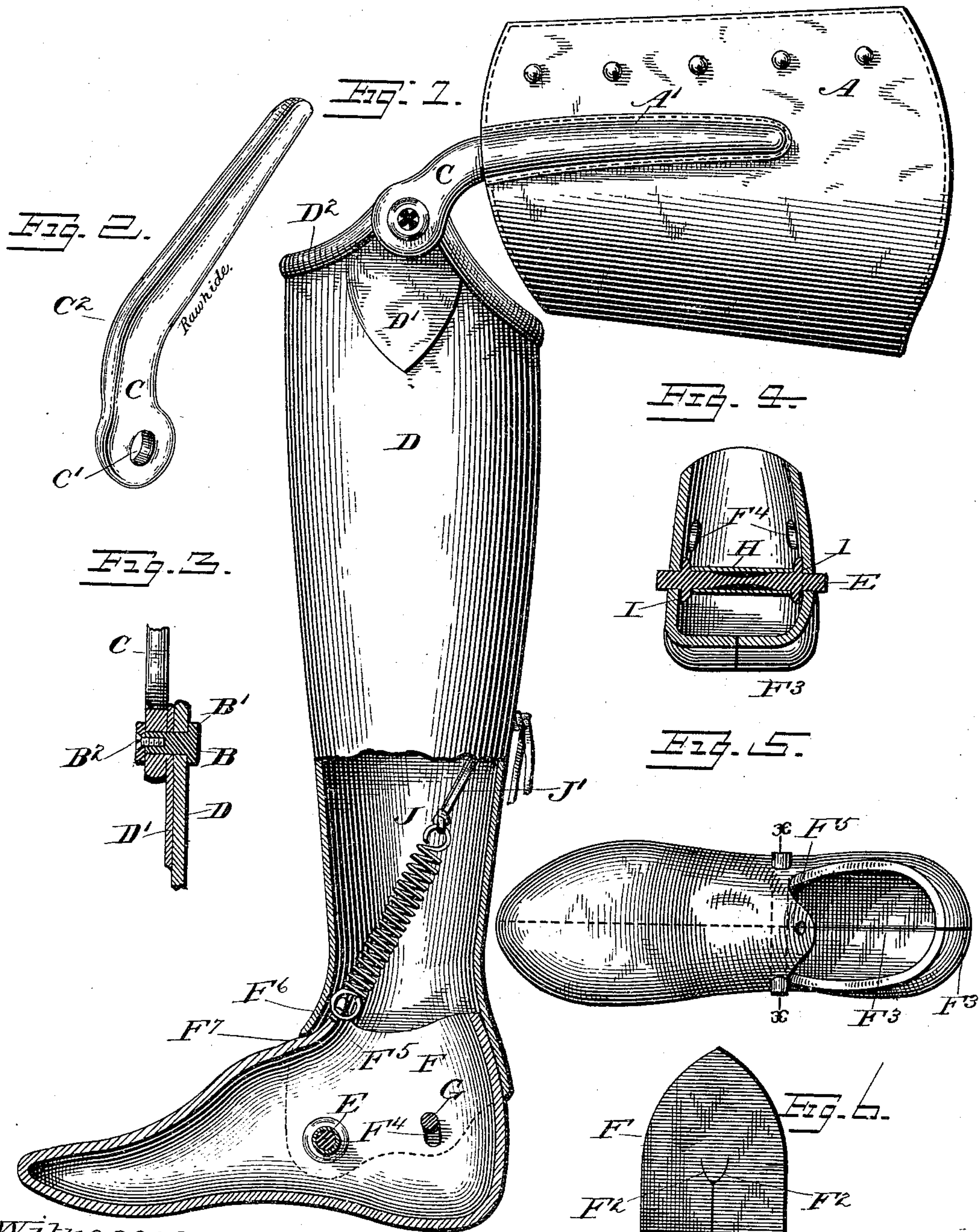
(No Model.)

G. BEACOCK & T. SPARHAM.

ARTIFICIAL LIMB.

No. 329,879.

Patented Nov. 10, 1885.



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE BEACOCK AND TERENCE SPARHAM, OF BROCKVILLE, ONTARIO,
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ARTIFICIAL LIMB.

SPECIFICATION forming part of Letters Patent No. 329,879, dated November 10, 1885.

Application filed April 3, 1885. Serial No. 161,115. (No model.)

To all whom it may concern:

Be it known that we, GEORGE BEACOCK and TERENCE SPARHAM, citizens of Canada, residing at Brockville, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Artificial Limbs, of which the following is a specification, reference being had to the accompanying drawings.

This invention has relation to artificial limbs of that class which are constructed of rawhide; and it refers particularly to the novel features of construction hereinafter described, and specifically set forth in the claims.

Referring to the drawings, Figure 1 is a side elevation and partial vertical central section of an artificial leg constructed in accordance with our invention. Fig. 2 is a perspective of one member of the knee-joint. Fig. 3 is a central vertical section of the knee-joint. Fig. 4 is a vertical section of the foot, the section being taken through the main pivot-bolt at *x*, Fig. 5. Fig. 5 is a plan of the foot, and Fig. 6 a plan of the blank from which the foot is formed.

Like letters indicate like parts in all the figures.

A represents the usual band, which is laced about the stump, and is provided with a pocket, A', for the reception of one member of the knee-joint. A similar pocket is formed on the opposite side of the band to receive a similar member on the opposite side of the knee-joint, as is usual.

The knee-joint consists of a pin or bolt, B, the inner end of which is flanged, as at B', and the outer end screw-threaded interiorly for the reception of a screw, B², the body portion of the bolt being long enough to pass through one wall of the leg proper, D, and in this instance a re-enforce, D', and through the remaining member C of the joint, all as clearly shown in Fig. 3.

The upper member, C, of the knee-joint is made entirely of rawhide, and is provided at its lower end with an aperture, C', which is adapted to snugly fit the pin B, and is curved, as at C², and projected in suitable form to be inserted into the pocket A' of the band A.

We have demonstrated by actual use material advantages in making at least one of the members of the joint of rawhide, and we also, if de-

sired, make the pin B, or its equivalent, of the same material, as we find by experience that it is less liable to wear, does not require oiling, never squeaks or rattles, and is sufficiently firm at the joint for the required strength, and at the same time is somewhat pliable a distance from the joint to permit of a free and easy movement of the parts connected thereby.

D² represents the usual chamois lining, which is inserted within and over the edges of the top of the leg proper.

The leg terminates in a shape adapted to overlap the upper part of the foot, and is extended down to or below the center of the foot, and is perforated at each side for the passage therethrough of the main pivot-rod E, said rod being placed substantially in a vertical line coinciding with the front of the leg, a location of the pivot which reduces to the minimum any semblance of limping by the user of legs so constructed.

The foot F is made of a single piece or blank of the shape shown in Fig. 6, in the base of which is formed a slit, F', terminating in two diverging slots, F². By the use of this blank a single seam, F³, extending from the toe to and up to the top of the heel, as clearly shown in Fig. 5, is all that is required in a foot so made, and, although advantageously located, we do not limit our invention to such a specific location of a single seam in the foot.

It will be noticed that the outlines of the instep and of the heel at the points where the lower edges of the leg come in contact therewith are on a circle the center of which coincides with the center of the main pivot-bolt E, and that the front edges of the lower end of the leg are cut to form an arch, which more or less strictly conforms to the outline of the instep, so that in the movement of the leg on its pivot E said edges saddle or bear upon said circular outline of the instep, whereby all tendency to crush the hollow foot, formed of a single piece of rawhide, is avoided by the snug embrace of the foot by the edges of the leg, as described. We consider this peculiar feature of the joint one of the essential novelties of our invention. The point of contact of the edges of the leg at, along, and upon the arch F' of the instep is rendered serviceable by forming that arch in a circle centered at the center of pivot E.

In order to limit the pivotal movement of the foot, we provide in the foot slots F^4 , through which a pin, G, secured at its ends in the lower end of the leg, passes. The pin G passes from side to side of the leg, and is firmly mounted therein, and it not only serves to limit the movement of the foot upon the pivot E, but when the heel is bearing the weight the pin G bears against the bottom of the slots, and in connection with the pivot E forms a solid support for the weight of the body of the wearer, and when the leg is inclined to the front and its front edges are straddling the arch of the instep, as hereinbefore set forth, the pin G strikes against the upper end of the slots F^4 , and further adds to the strength of the construction employed. The pivot-rod E passes through the walls of the foot and of the leg, which, being both made of rawhide, secures a joint at this part which possesses all of the advantages set forth in relation to the knee-joint above described.

To further strengthen the hollow foot, and to prevent the necessity of using any internal blocks, which are commonly used, we may provide a sleeve, H, and washer I, either independent of or integral with said sleeve, and mount the same upon the bolt E, which may or may not, as desired, be reduced in size at the center, as shown in Fig. 4, in order to reduce the weight of the leg as a whole.

A single tendon, J, is employed in our invention, and is connected in the form of a coiled spring directly to the tip F^5 of the instep of the foot by being hooked or otherwise connected thereto, in this instance by passing a coil of the spring through an aperture, F^6 , formed in the tip. The opposite end of the spring is con-

nected to cords J', which pass through apertures in the leg at the calf, where they are tied to each other after being strained to put the spring under proper tension to adapt the leg to be worn with a light shoe or heavy boot, as desired.

Having described our invention and its operation, what we claim is—

1. In an artificial limb, the combination of a leg and a foot, a pivot passing through both of these members at a point substantially in a vertical line with the front of the leg, and a bar passing through both of these members and adapted to move in slots formed in the foot, substantially as specified.

2. In an artificial limb, a joint, one member of which is made entirely of rawhide, substantially as specified.

3. The combination, with the leg D and band A, having the pockets A' , of the rawhide arm or joint C, adapted to fit the pin B of the leg, and the pockets A' of the band, substantially as specified.

4. The combination of the leg D, the reinforce D' , the pin B, having the flange B' , the arm or joint C, and the screw and washer B^2 , substantially as shown and described.

5. The combination of the leg D, the foot F, the pivot E, the sleeve H, washers I, the rod G, the spring J, and the cords J', substantially as shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE BEACOCK.
TERENCE SPARHAM.

Witnesses:

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