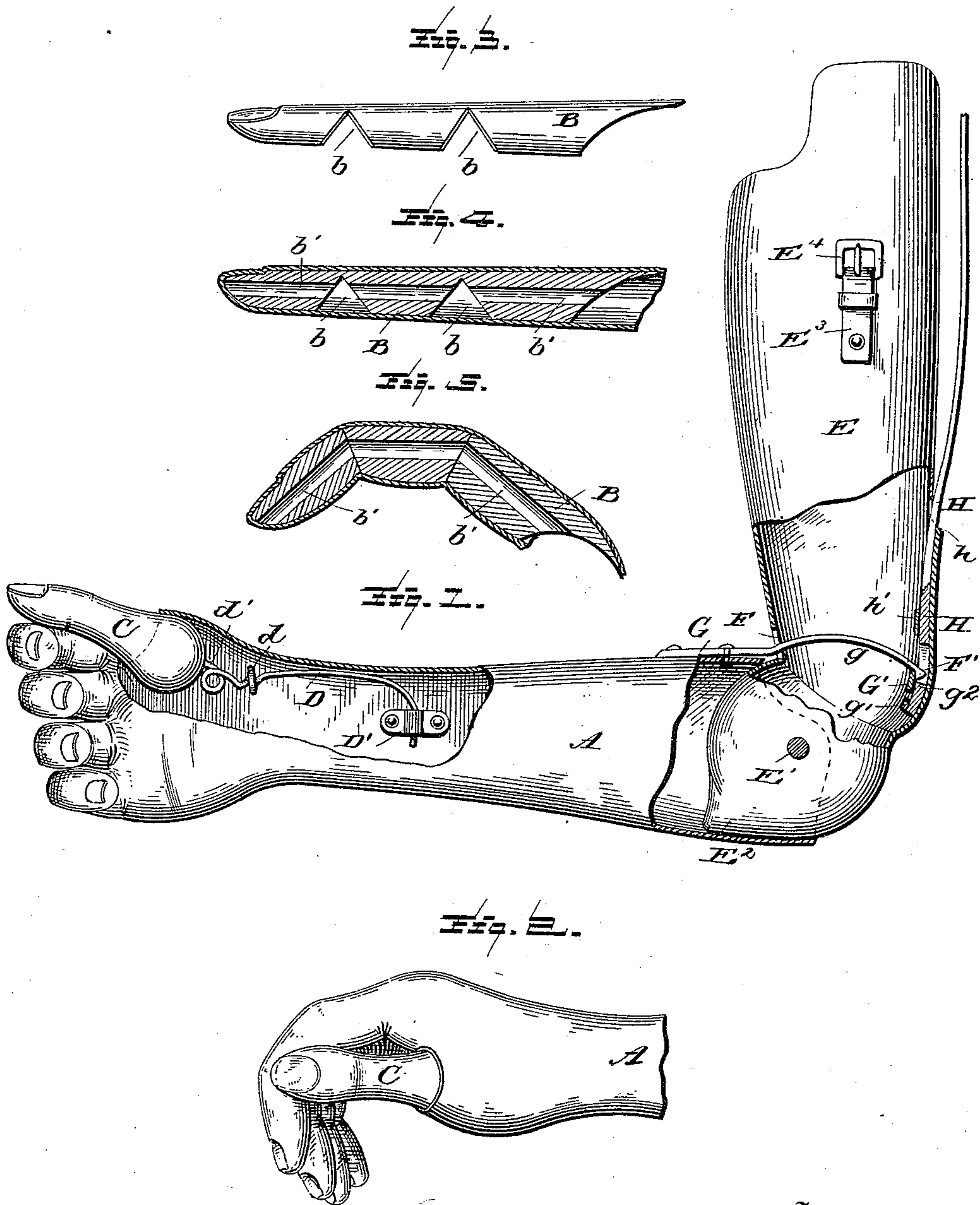


(No Model.)

T. SPARHAM.
ARTIFICIAL ARM.

No. 450,476.

Patented Apr. 14, 1891.



Witnesses:
L. C. Hills.
E. A. Bond.

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UNITED STATES PATENT OFFICE.

TERENCE SPARHAM, OF BROCKVILLE, CANADA, ASSIGNOR OF ONE-HALF TO
T. J. B. HARDING, OF SAME PLACE.

ARTIFICIAL ARM.

SPECIFICATION forming part of Letters Patent No. 450,476, dated April 14, 1891.

Application filed August 21, 1890. Serial No. 362,617. (No model.)

To all whom it may concern:

Be it known that I, TERENCE SPARHAM, a subject of the Queen of Great Britain, residing at Brockville, Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Artificial Limbs, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in artificial limbs; and it has for its object, among others, to provide a movable thumb retained in its seat by a spring resilient in directions at right angles to each other, to provide at the elbow-joints a spring-catch and means for automatically loosening the same by movement of the wearer, and to provide a finger having a scored and bent filling.

20 Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly pointed out in the appended claims.

25 The invention consists, further, in an improved method of making a rawhide finger, as will be more specifically hereinafter described.

30 The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, in which—

35 Figure 1 is a side elevation with parts broken away and in section to better disclose the construction. Fig. 2 is an end view of the hand. Fig. 3 is a side elevation of the scored filling removed. Fig. 4 is a vertical longitudinal section through the finger with the scored filling in place before being bent. Fig. 5 is a like view after the scored filling is bent.

40 Like letters of reference illustrate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates a forearm having preferably the wrist and hand made in one piece therewith and formed of rawhide properly treated. The fingers of the hand are preferably bent so as to form a sort of hook, as shown in Fig. 2, and are thus formed as follows: I take the rawhide, after having been properly treated and placed within each finger thereof while the finger portion of the rawhide is straight, as shown in Fig. 4, and

place therein a core B, of any suitable material, preferably light wood and scored, as shown at *b*, at points coincident with the joints of the fingers, and then, by any suitable means, bend this core or filling, as shown in Fig. 5, to give the desired form to the finger. The core or filling is provided with a longitudinal air-vent *b'*, as shown in Figs. 4 and 5, to permit of the escape of the air there- through as the core is forced into the fingers.

C is the thumb having a ball-and-socket connection or seat within the hand. This thumb normally extends substantially in line with the length of the forearm, as shown in Fig. 2, and is movable in various directions, being retained in its seat by a spring D, pivoted at one end within a suitable bearing or plate D' within the forearm at any suitable point, preferably, however, in substantially the position shown and arranged, so as to be resilient in direction at right angles to each other. Provision is made for this movement or these movements, preferably in the manner in Fig. 1, wherein the spring is formed with a bend, coil, or convolute *d* and a second bend, coil, or convolute *d'*, extending in a plane at right angles to the coil *d*. This is the preferable manner of providing for this movement; but I do not mean to restrict myself thereto, as modifications in this respect may be resorted to without departing from the result obtained.

E is the upper arm, pivotally connected with the forearm upon the pivot E' and composed of rawhide and formed with a suitable stop, as E², to limit the movement of the parts, as shown in Fig. 1. This upper arm is provided near its upper end with a strap E³ and buckle E⁴ to receive the ends of a suspender or supporting-strap—such, for instance, as is shown in my application of this date herewith.

Attached to the upper portion of the forearm near its connections with the upper arm is a spring-catch G, secured thereto in any suitable manner and working through an aperture F in an adjacent portion of the upper arm, as shown in Fig. 1. The inner end of this catch is formed with a latch-notch or other provision F', designed to engage a suitable stop or cross-piece G', secured within the forearm in any suitable manner. In Fig.

1 this latch is shown as engaging the arm, and the forearm is thus held in a horizontal position or at right angles to the upper arm.

In order to provide for the loosening of this
5 catch, I have devised the following construction, which consists of a strap H, designed to extend to the shoulder, where it may be connected with the suspenders or supporting-
10 straps above described, and at its lower end extending into the interior of the upper arm through suitable openings *h* provided therefor, and within the arm is guided by suitable guides *h'*, the arm *G'* serving as one guide. The lower end of this strap has an opening *g*,
15 through which the latch end of the catch *G* projects, and at its extreme lower end provided with a projection *g'*, working beneath said arm *G* and in conjunction with said arm forming a stop to limit the movement of the
20 stop and prevent its withdrawal.

With the parts in the position in which they are shown in Fig. 1, and it is desired to release the forearm to allow it to assume a position in line with the upper arm, all that is necessary to do is to work the shoulder slightly upward, when the shoulder *g*² on the strap engages the latch portion of the latch *G* and raises it out of engagement with the arm *G'*, when the forearm falls by its own gravity.

30 What I claim as new is—

1. An artificial arm provided at the elbow-joint with a spring-catch and with means for automatically releasing the catch by the movement of the shoulder of the wearer, substantially as described.
35

2. An artificial arm having a spring-catch at the elbow-joint and a strap extending to the shoulder for releasing the catch, substantially as described.

40 3. In an artificial arm, a finger having a

scored and bent filling, substantially as described.

4. The method of making a rawhide finger, which consists in forming a filling having an air-vent and scored at points coincident at the joints of the fingers and bending the filling after its insertion, substantially as described. 45

5. As an improved article of manufacture, a core for artificial fingers, consisting of a bendable scored form, substantially as described. 50

6. In an artificial arm, a thumb having a seat in the forearm, combined with a spring within the arm and having coils convoluted or bends arranged in planes at right angles to each other, substantially as described. 55

7. In an artificial arm, a finger having an independent filling cored and bent at the joints of the fingers, substantially as specified. 60

8. A core for artificial fingers, consisting of a bendable scored longitudinally-bored form, substantially as specified.

9. An artificial arm having a spring-catch at the elbow-joint and a strap guided within the upper arm and constructed to release the catch by a movement of the shoulder of the wearer, substantially as specified. 65

10. An artificial arm having a spring-catch at the elbow-joint and a strap guided within the upper arm and provided with an opening and projection, as and for the purpose specified. 70

In testimony whereof I affix my signature in presence of two witnesses. 75

TERENCE SPARHAM.

Witnesses:

L. C. HILLS,

H. SUTHERLAND.