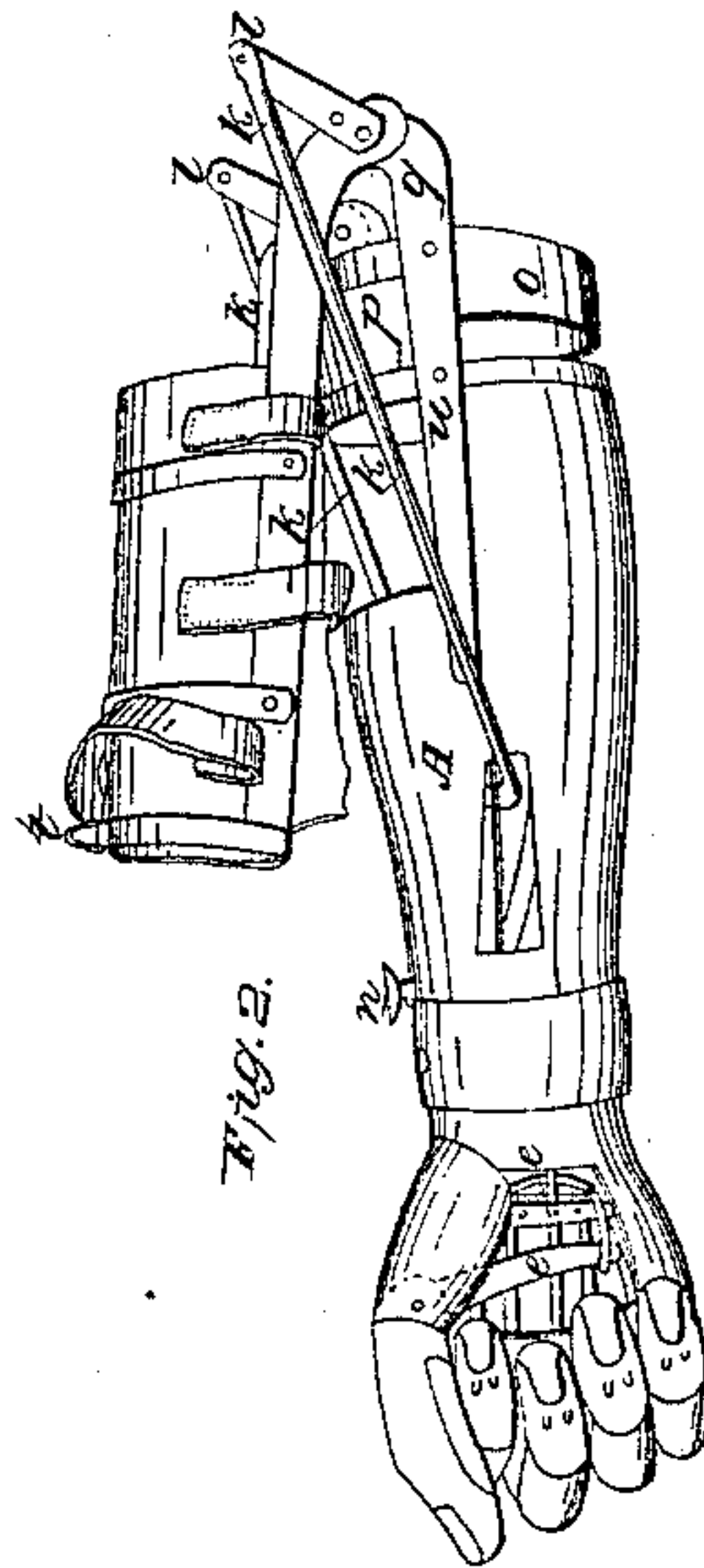
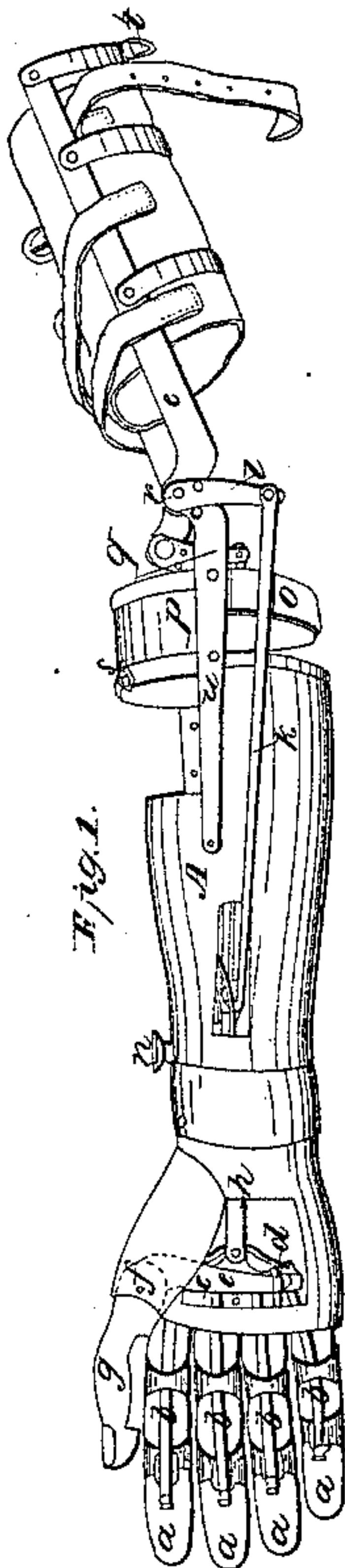


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I. Stoffel,
Artificial Arm.

N^o 57,594.

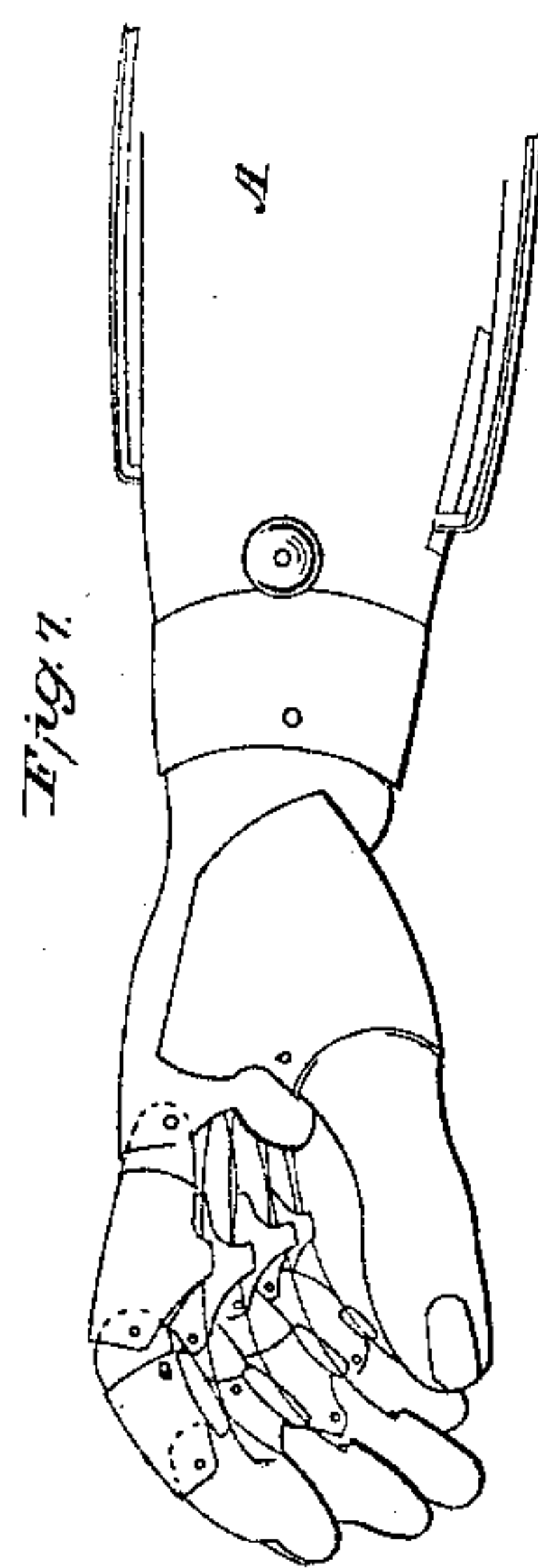
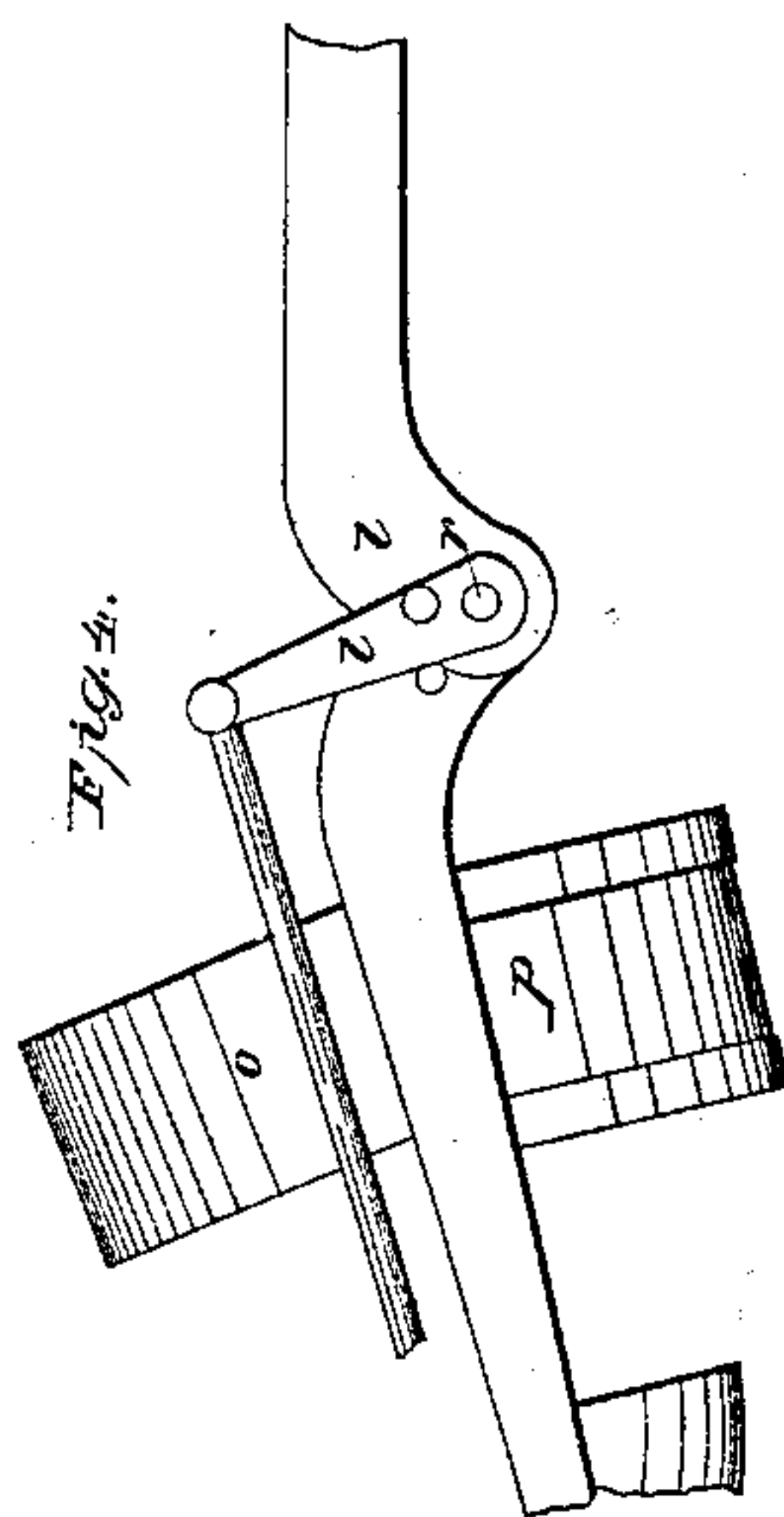
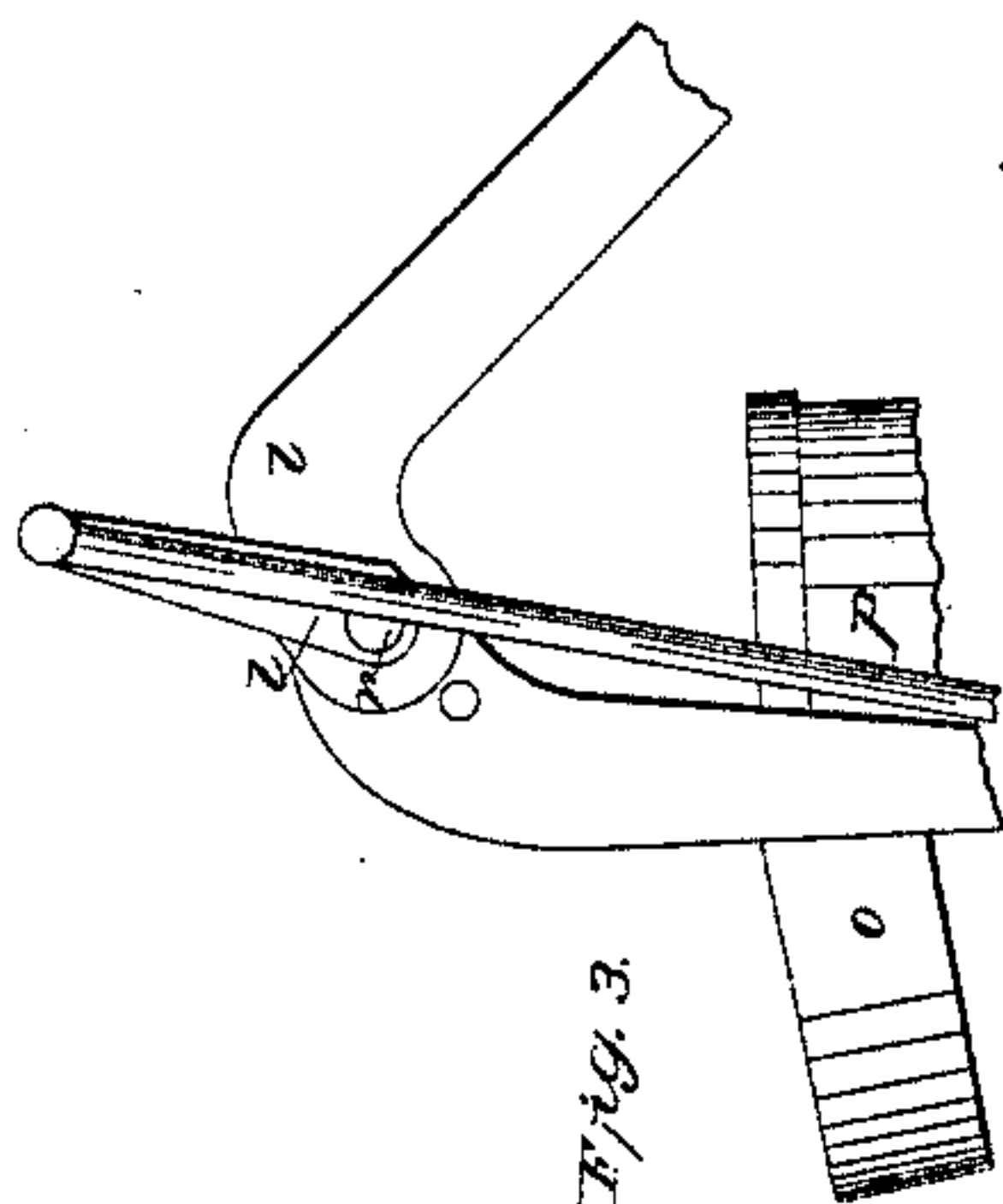
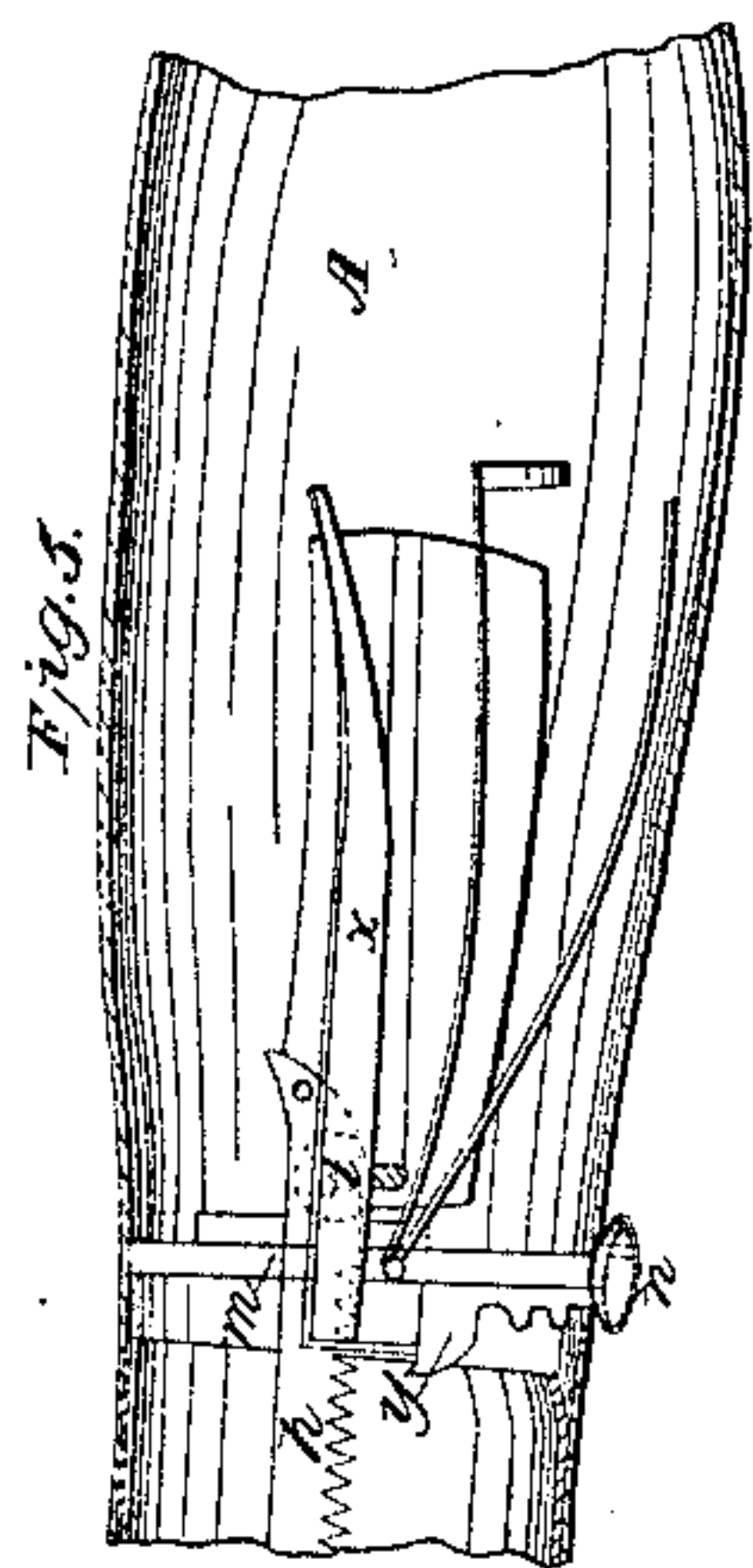
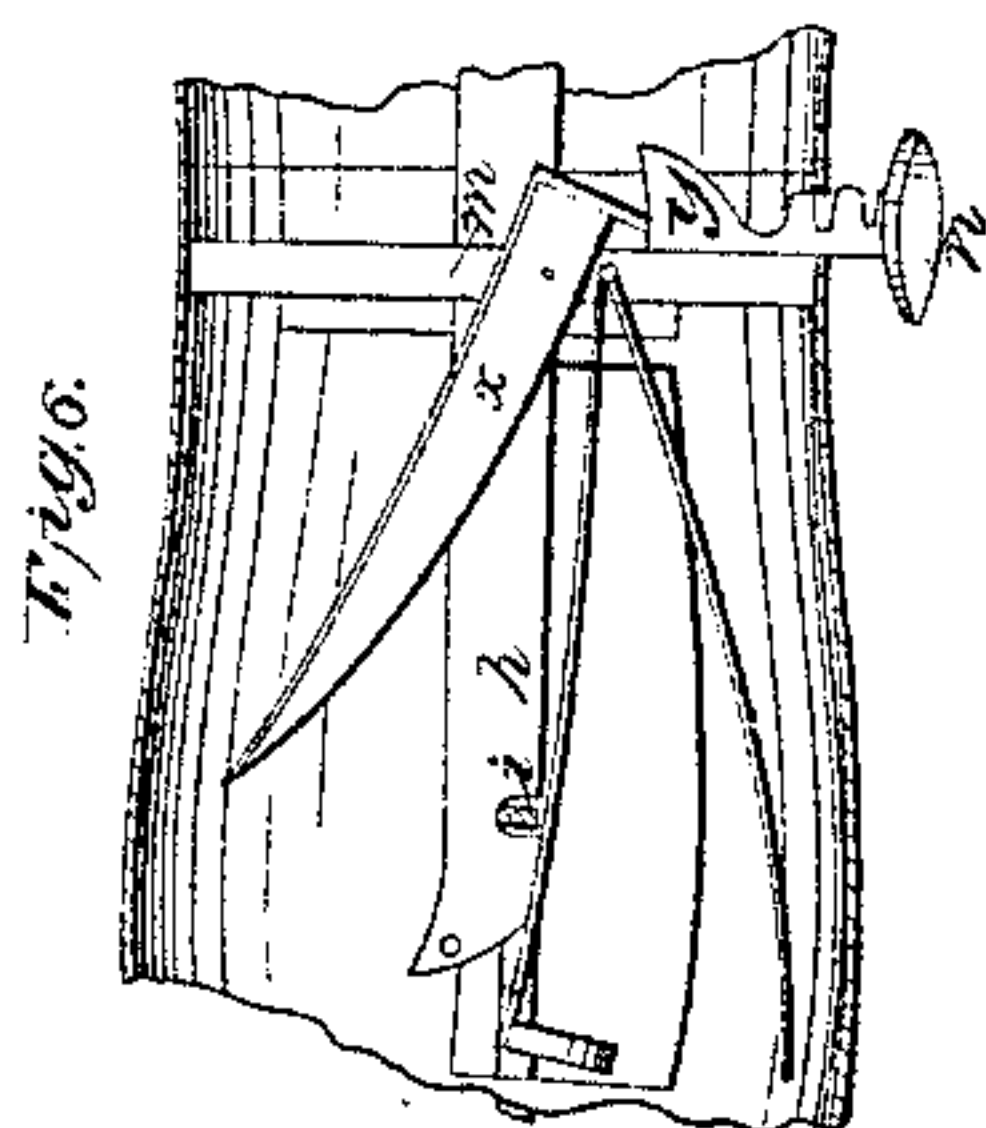
Patented Aug. 28, 1866.



Witnesses:
J. R. Hayes
Henry Ermi.

Inventor:
Ignatius Stoffel.

I. Stoffel,
Artificial Arm,
N^o 57,594. *Patented Aug. 28, 1866.*



Witnesses:
J. R. Hayes,
Henry L. Smith.

Inventor:
Ignatius Stoffel.

UNITED STATES PATENT OFFICE.

IGNATIUS STOFFEL, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN ARTIFICIAL ARMS.

Specification forming part of Letters Patent No. 57,594, dated August 28, 1866.

To all whom it may concern:

Be it known that I, IGNATIUS STOFFEL, of Washington, District of Columbia, have invented a new and Improved Artificial Fore-Arm; and I do hereby declare the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is a perspective view, showing the fore-arm and hand extended. Fig. 2 shows the hand closed; Figs. 3 and 4, views, in different positions, of the levers and forked connecting-rods which operate the mechanism giving motion to the hand; Figs. 5 and 6, different views of the mechanism by which the forked connecting-rod may be detached from that which operates the hand, allowing the latter to be kept open or closed independent of the motion of the former; Fig. 7, an upper side view of the hand, showing the construction of the joints of the fingers, &c.

Similar letters of reference in each of the several figures indicate corresponding parts.

This invention relates to certain improvements in the construction of artificial fore-arms to be attached and used when a stump is left below the elbow of the natural arm, by which motion may be transmitted to different parts of the artificial arm by different movements of the stump, and are mainly improvements on that described in patent to me, dated January 10, 1865, for artificial arm; and it consists, first, in the manner of attaching and operating the springs which represent the tendons in the natural hand to the last phalange, at or near the joint, dispensing with the guide-rings which represent the tendinous bands in the natural hand, and thus avoid friction; second, in the construction and operation of the thumb, making the articulation and pivoting the lever at the second instead of the third joint, thereby increasing the strength of the thumb and the power exerted by it; third, in the construction, arrangement, and operation of the trigger; fourth, in the movable band or support for the stump of the fore-arm; fifth, in the bent or bell-crank lever at or near the elbow-joint, by which greater play can be given to said joint; sixth, in the guide-rings at or near the elbow-joint and the outside of the upper

fastening or case on the arm near the shoulder, through which rings passes the cord which is used in operating the arm.

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

In Figures 1, 2, 5, 6, and 7, the letter A designates a case or shell, representing the fore-arm—in Fig. 1, the hand extended; in Fig. 2, the same closed. Fastened to the last phalanges *a a a* near the joint by small hinges, or their equivalents, are the springs or bands *b b b b*, which correspond to the tendons in the natural hand, their inner ends being fastened to a stirrup, *c*, Fig. 2, the movements of which operate all the fingers; and by means of a loop, *a*, attached to the outer end of said stirrup, and receiving the thumb-lever *e*, with fulcrum at *f*, motion is also transmitted to the thumb *g* and with much greater effect than if the fulcrum should be placed at the third joint, as in the patent referred to.

To the stirrup *c* is attached a connecting-rod, *h*, Figs. 1, 5, and 6, formed of two flat bars, side by side, fastened together at the outer end and passing through the post or guide *m*, Figs. 5 and 6. One of these bars has its upper edge serrated, forming a ratchet. The other bar is plain; but both have near their outer ends a deep notch or recess in their upper sides, at *i*, in which rests the forked connecting-rod *k*, which receives motion through the bent lever or bell-crank *l* from the motion of the stump of the fore-arm, and transmits it to the mechanism already described.

Pivoted to the post or support *m*, Figs. 5 and 6, and parallel to and on each side of the connecting-rod *h*, are levers *x x*, the elevation or depression of which throws the forked connecting-rod out or in the notch *i*. These levers are operated by the trigger *n*, Figs. 1, 2, 5, and 6, the hook *y* of which presses upon the short arms thereof and throws upward the long ones, disconnecting the rods *h* and *k*. At the same time a spur on the trigger sinks into the ratchet-bar of rod *h* and holds the fingers in any position in which they may happen to be at the time, as shown partially in Fig. 5. In Fig. 6 the trigger is shown withdrawn and the two connecting-rods in gear.

Figs. 3 and 4 show the bent or bell-crank lever *l* in different positions, and also the bands *o* and *p*, the latter being rigid or permanently fastened to the straps or bars *u*; the former pivoted to the same at *q*, and adjustable to or from the elbow-joint to suit the different lengths of stumps of arms to which they are to be attached. The length of lever-arm *l* is also adjustable for the same purpose. Attached to the band *p* is a loop or ring, *s*, which, in combination with the one at *t*, Fig. 1, is used for the passage of a cord to assist in operating the arm.

The construction of the articulations or joints (except the last ones) of the fingers and hand do not differ substantially from those shown in the patent referred to, and the manner of securing the artificial to the remaining part of the natural arm is so apparent that a description is not considered necessary.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The construction of the last or outer articulations or joints, or means of operating the outer or last phalanges by the steel bands without the guide, substantially as shown and described.

2. Pivoting the thumb and lever connecting therewith at the second joint, in the manner and for the purpose substantially as described.

3. The construction, arrangement, and operation of trigger *n*, in combination with levers *x x* and connecting-rods *h* and *k*, substantially as described.

4. The adjustable band *o*, when constructed and arranged as described.

5. The bent or bell-crank lever *l*, constructed and arranged to operate as and for the purpose described.

6. The loops or rings *s* and *t*, when arranged as and for the purpose described.

IGNATIUS STOFFEL.

Witnesses:

PAUL SIPOS,
JOHN BOWER.