

No. 698,162.

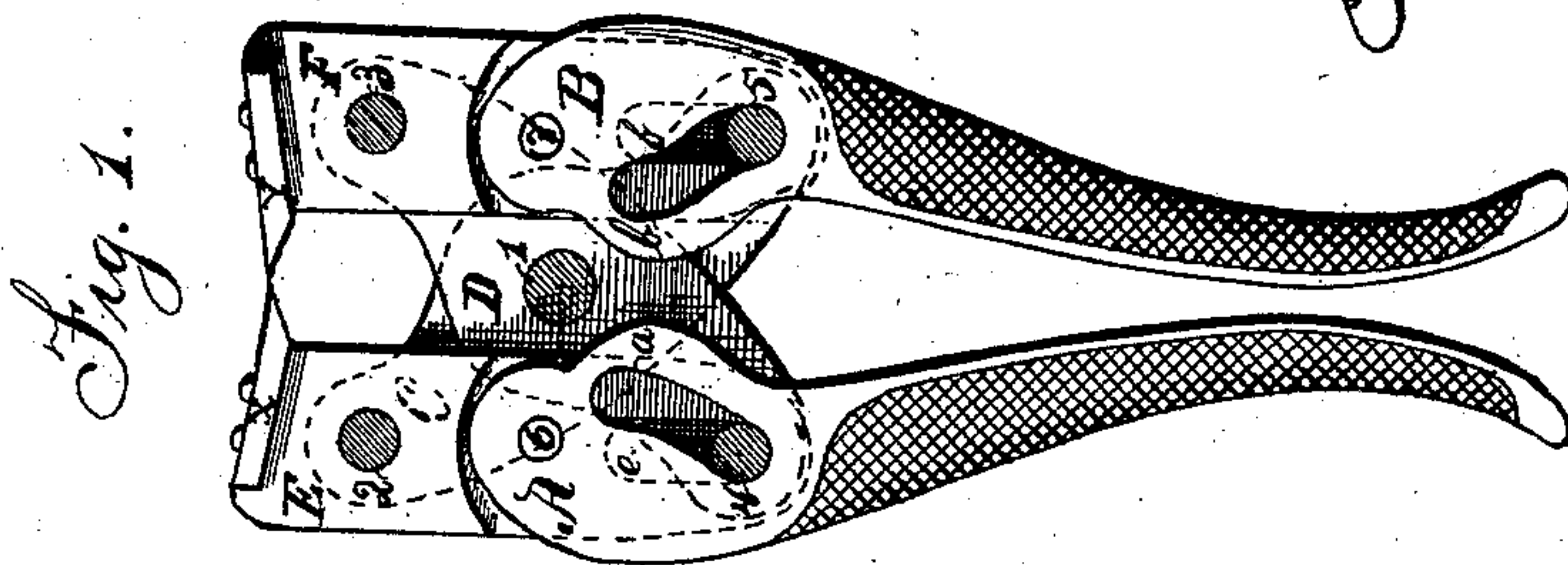
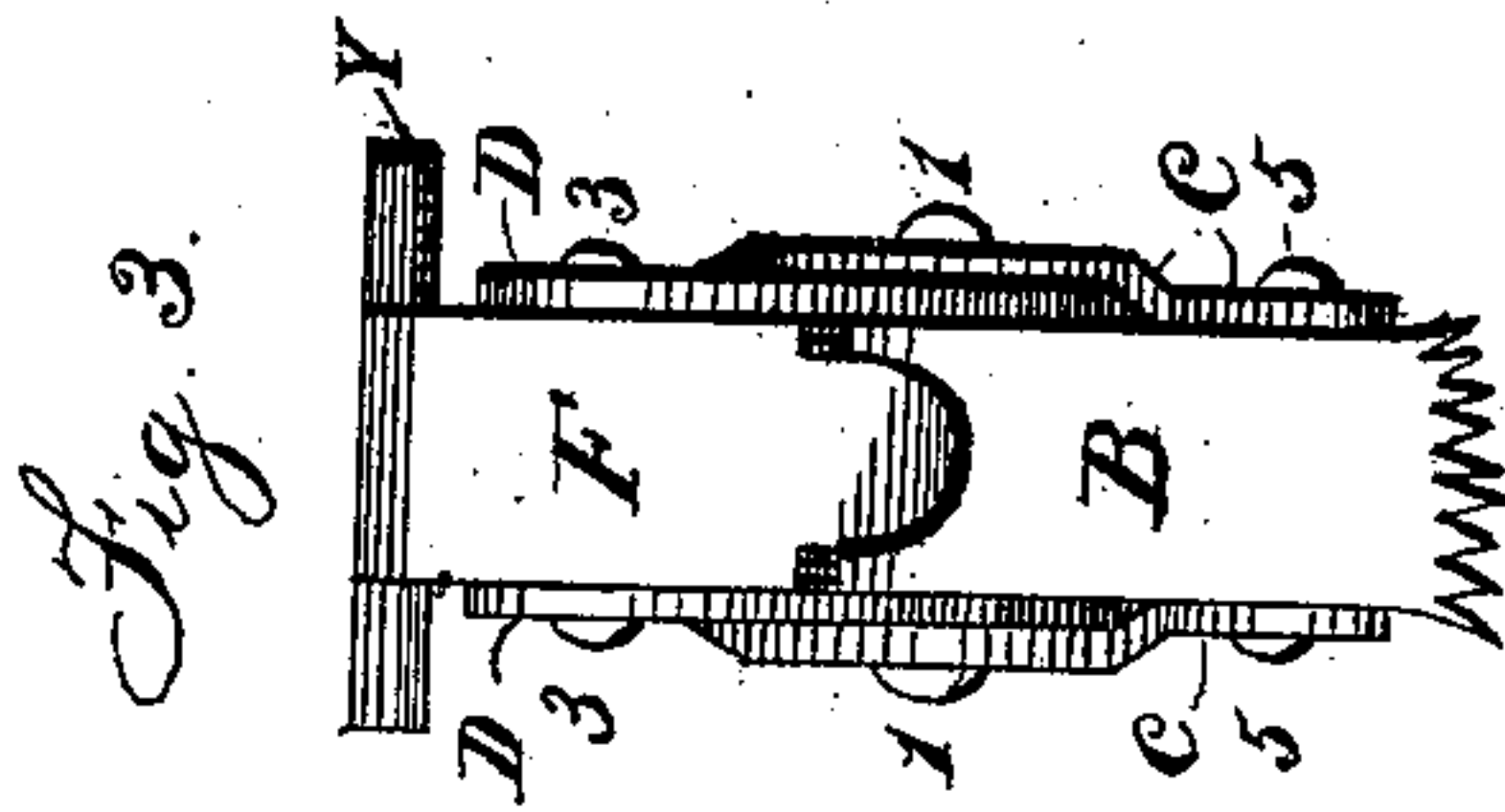
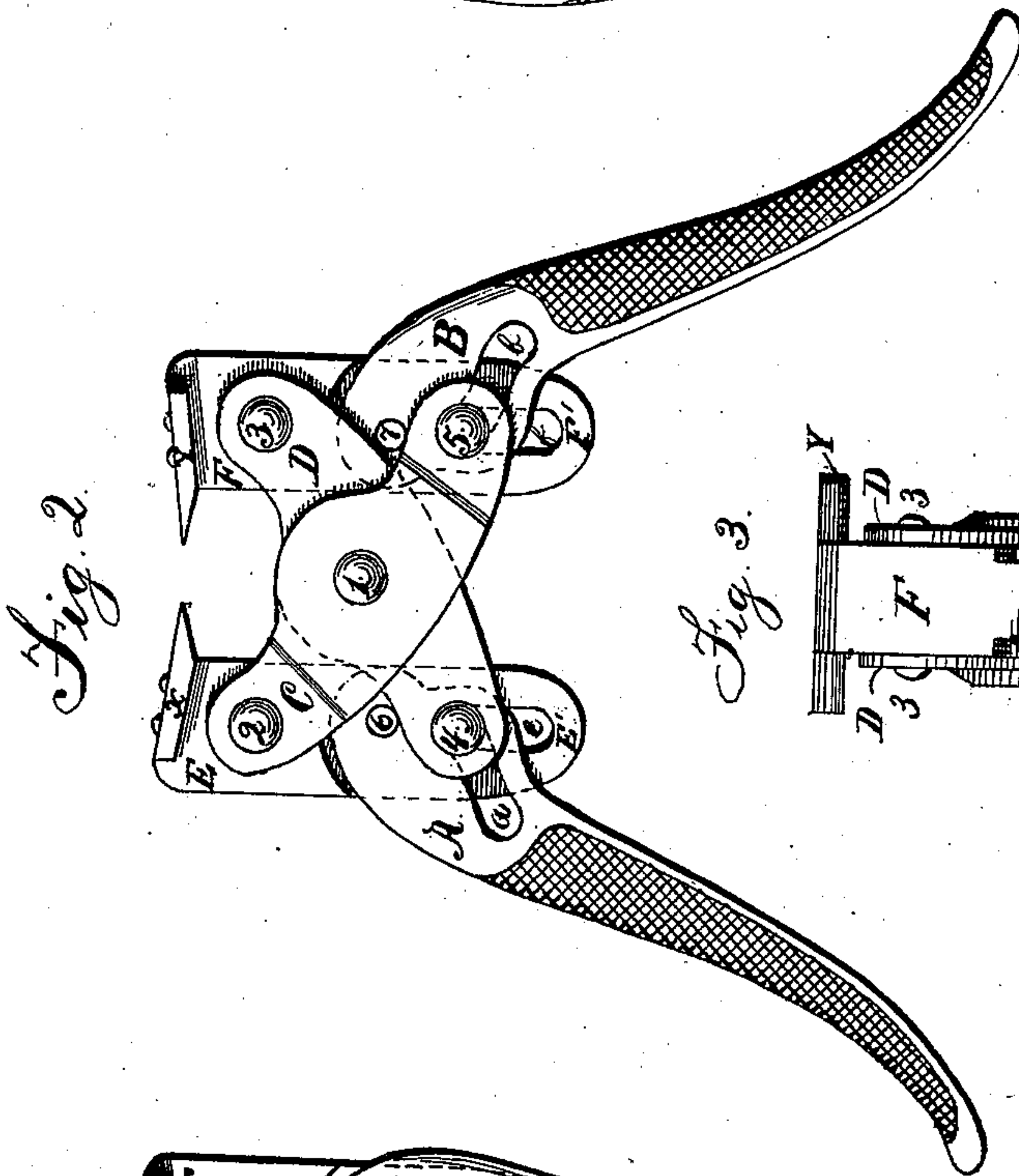
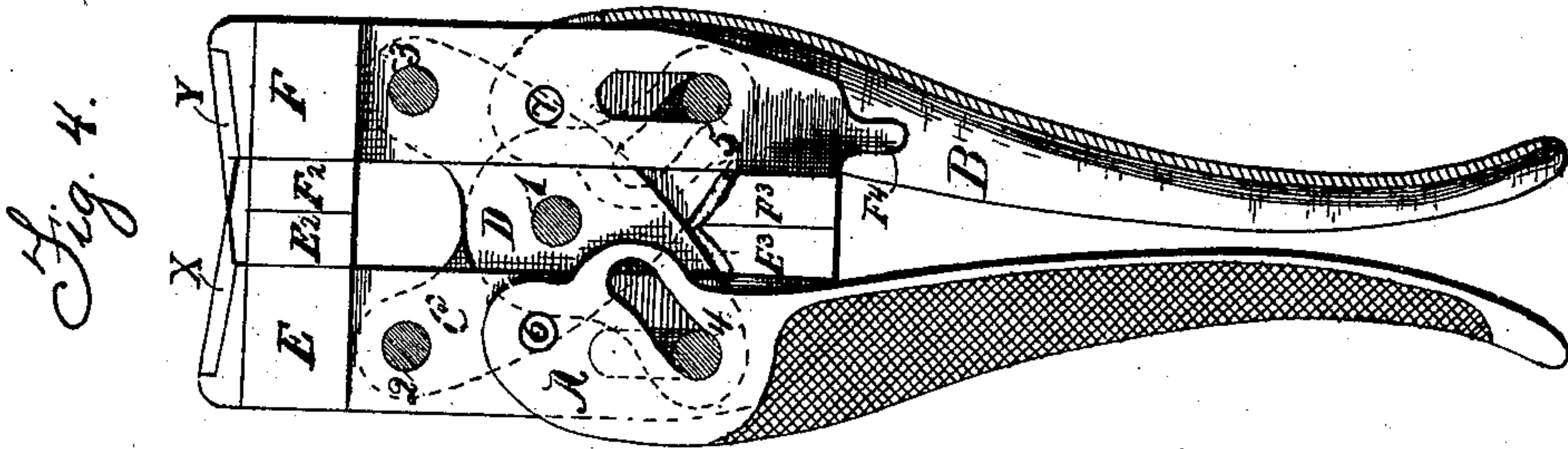
Patented Apr. 22, 1902.

H. G. WEIBEZAHL.  
PLIERS AND GRIPPING TOOL.

(Application filed May 11, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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J. Brady.

Inventor

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No. 698,162.

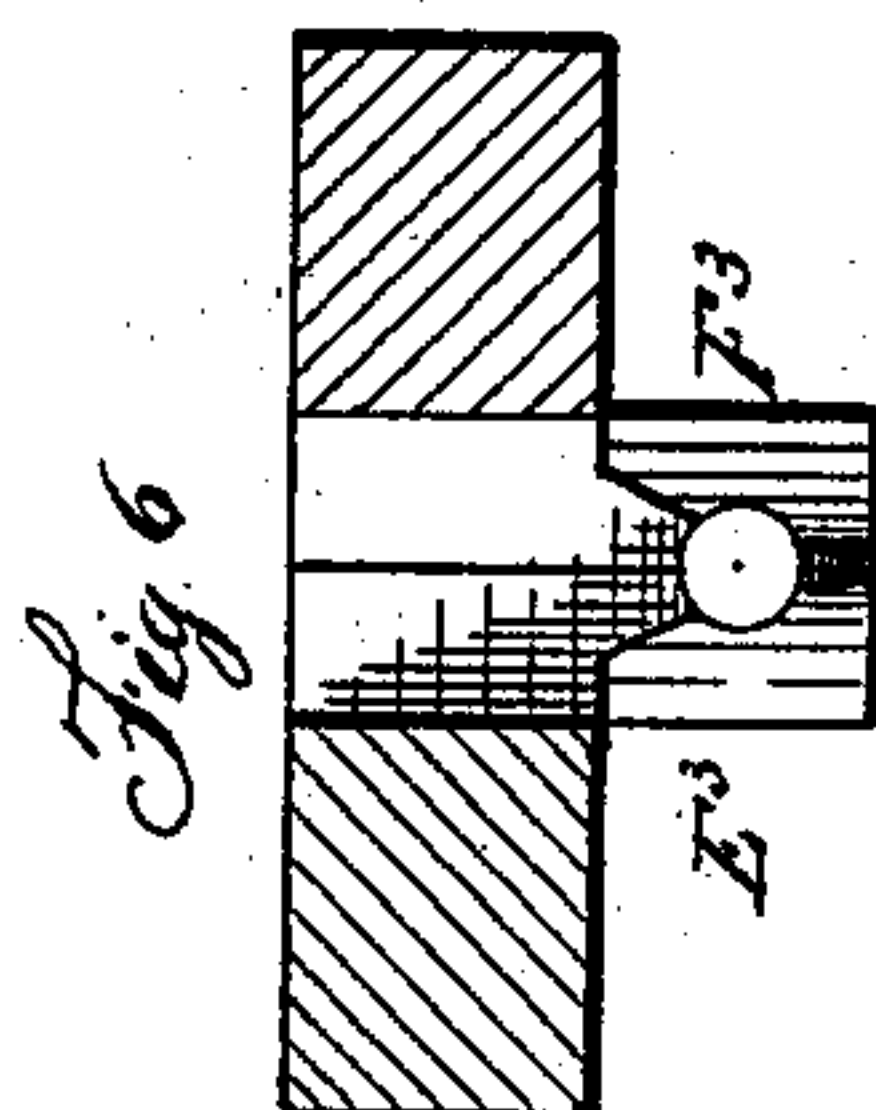
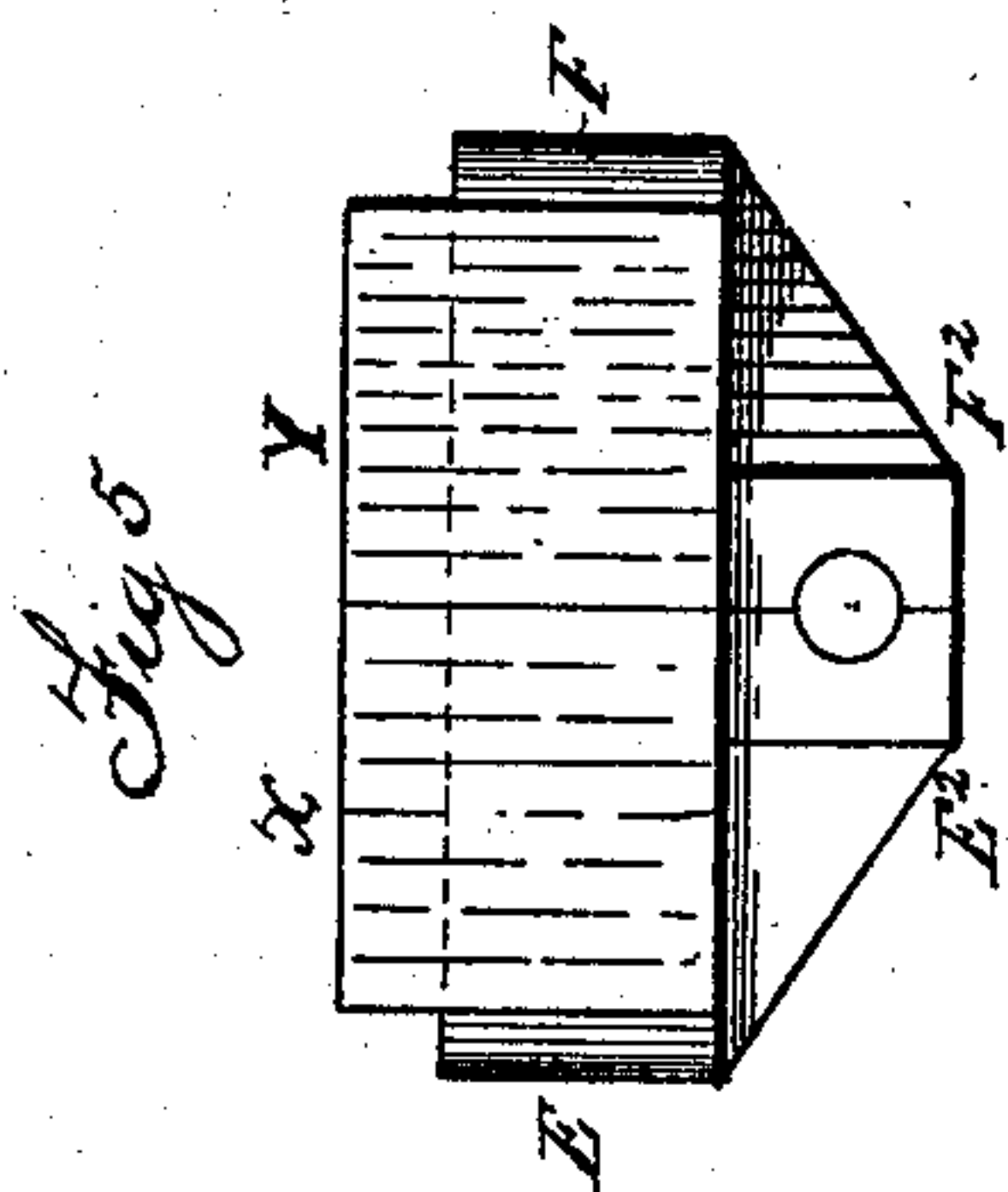
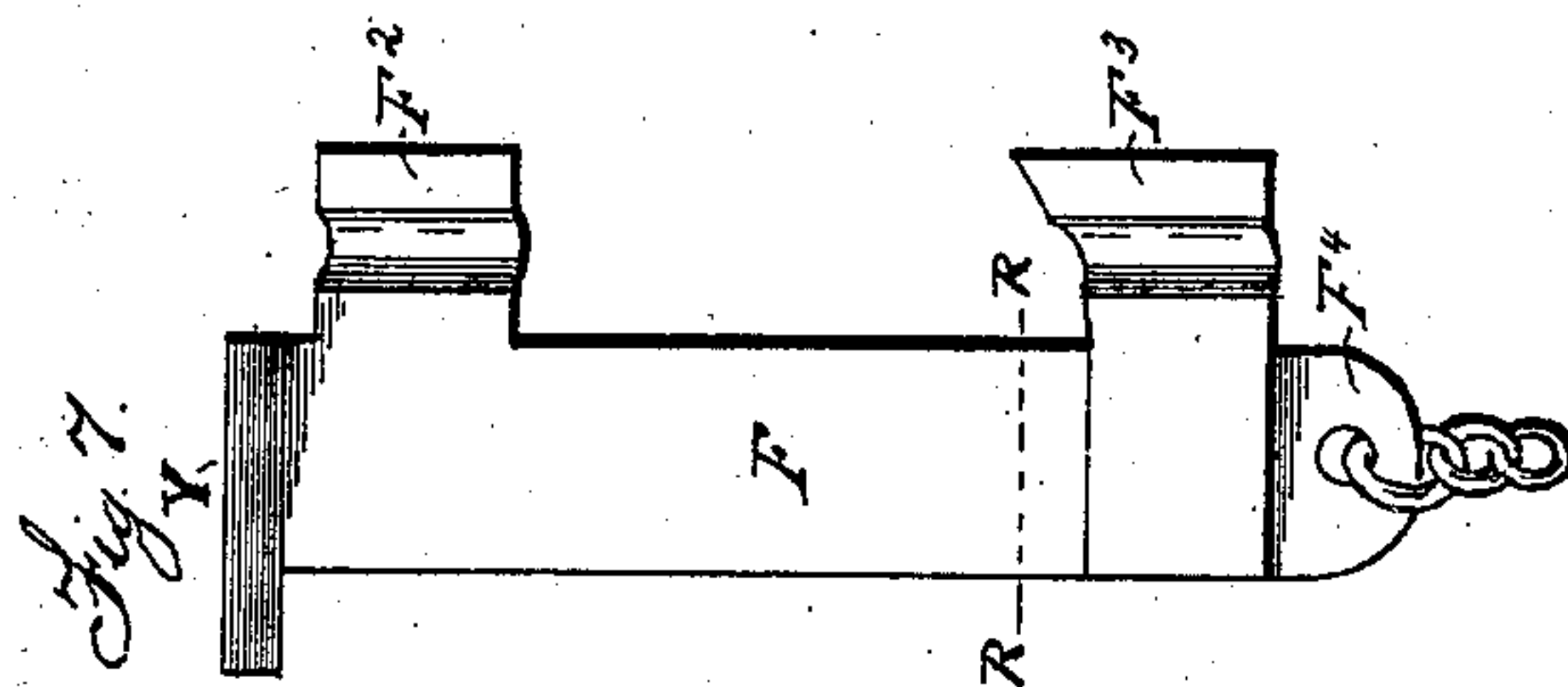
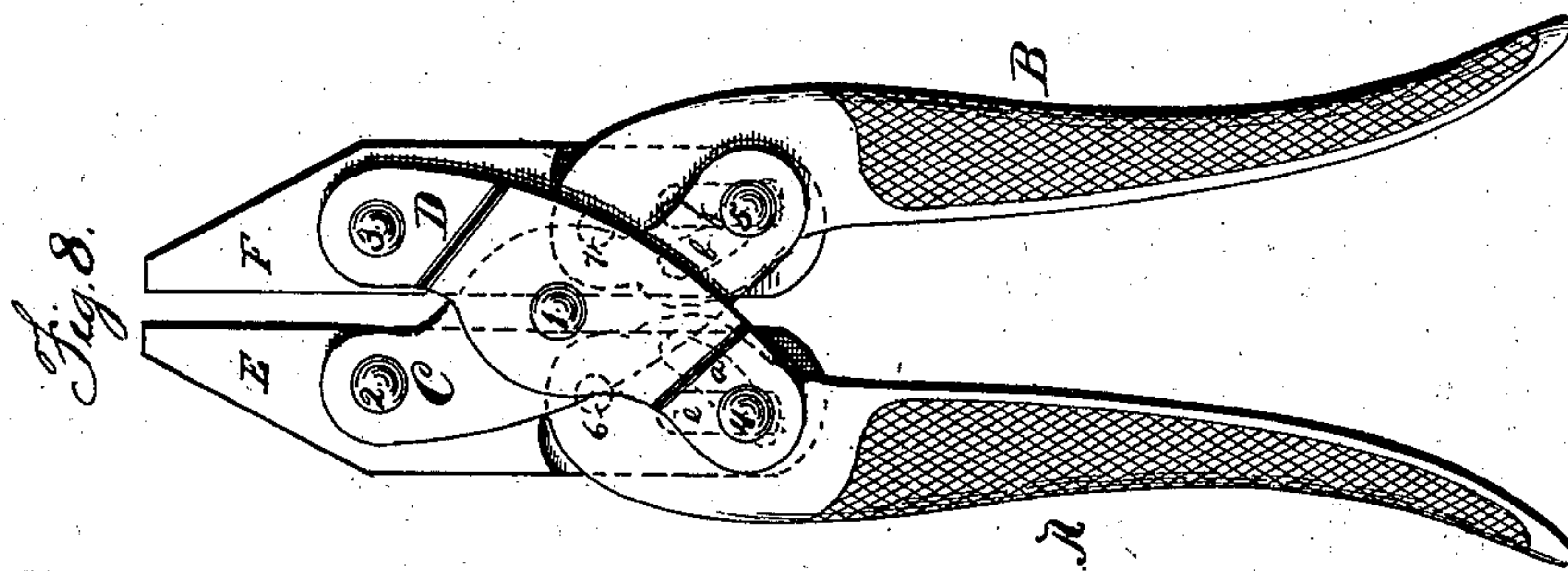
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(Application filed May 11, 1901.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses  
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# UNITED STATES PATENT OFFICE.

HERMAN G. WEIBEZAH, OF NEW YORK, N. Y.

## PLIERS AND GRIPPING-TOOL.

SPECIFICATION forming part of Letters Patent No. 698,162, dated April 22, 1902.

Application filed May 11, 1901. Serial No. 59,878. (No model.)

*To all whom it may concern:*

Be it known that I, HERMAN G. WEIBEZAH, a citizen of the United States, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Pliers and Gripping-Tools, of which the following is a specification.

The object of the present invention is to provide a tool in the class of parallel pliers which shall give a still greater ratio of power than can be obtained by the forms invented by me and made the subjects of previous applications for patents. To accomplish this result, I use primary and secondary levers, the former being uncrossed and the latter crossing each other.

For the purpose of illustrating my invention I will show and describe what I consider its best form.

Figure 1 is a general face view of the tool closed with the front secondary levers omitted. Fig. 2 is a similar view showing the tool complete open. Fig. 3 is a side view of the head portion of tool. Fig. 4 shows one of the adaptations of the principle to a combined nippers and "grip" designed to be used by linemen in telegraph-line construction. The secondary front levers are omitted, and one of the primary levers is shown in section. Fig. 5 represents a top view of the nipping-jaws X Y and the gripping-jaws E<sup>2</sup> F<sup>2</sup> of the tool represented in Fig. 4, while Fig. 6 is a cross-section of the lower portions of the jaw-carrying members on lines R R shown in Fig. 7. In this view are shown the gripping-jaws E<sup>3</sup> F<sup>3</sup>. Fig. 7 is an inner side view of the jaw-carrying member F. Fig. 8 represents the movement with plain jaws mounted upon it. Similar characters of reference indicate corresponding parts in all the figures where they appear.

Referring to Fig. 1, A B are the primary levers. I have shown them as bent up of sheet metal. They are bifurcated to a limited extent. Each carries a slot on the face side, (designated a b,) in which work the pins 4 5, which pass through slots e f in the jaw-carrying members and connect the lower terminals of the secondary levers C C D D. Each of the primary levers is fastened to the jaw-carrying members by a pin. (Designated 6 and 7, respectively.)

The secondary levers above referred to are four plates mounted in sets, two on each side of the tool. Connection between them is established at or near their centers by the fulcrum-pin 1 and at their upper terminals by the pins 2 3, which also pass through the upper portions of the members E F. Their lower terminals are connected, as shown, by pins 4 5. I have bent the ends of the levers C, so as to have each terminal of the various levers occupy the same plane.

The members E F, equipped with jaws X Y, are made with shanks E' F', milled out for the reception of the primary levers, so that these levers and the thicker upper portion of the members present an even surface, as more fully shown in Fig. 3. The slots e f, previously referred to, carry the pins 4 5, which work freely up and down in them, working at the same time in the slots a b of the primary levers.

In the operation of the tool as the levers A B are pressed together, being pivoted by the pins 6 7, they force the pins 4 5 downward in the slots e f and cause the cross-levers to close up, carrying the members E F with them. The slots in the levers A B are so fashioned that they bear downward and inward against the pins 4 5 at all times during the closing operation and the reverse when the levers are thrown apart. The angle of the slots a b and their curve regulate the power to be obtained by the tool, and a still greater ratio of power than that shown in the drawings may be obtained by varying the angle, also by changing the position of the pins 6 7 relatively to the said slots a b.

In the construction of the tool I have adopted the sheet-steel handle-levers as being cheaper, lighter, and at the same time serviceable. In some cases, such as bolt-cutters, where the power called for is very great, solid levers may be found more serviceable, the movement being capable of developing a power of one hundred to one with shorter levers than those employed in the bolt-cutters at present upon the market.

Any form of jaw may of course be substituted for those shown in the illustrations, and the movement may be adapted to a variety of opening-and-closing devices. In Figs. 1 and 2 I have shown the movement equipped with nipping-jaws for the purpose of more clearly



illustrating a novel adaptation of jaws to the movement, which is shown in Fig. 4, in which is illustrated cutting-nippers with linemen's grip attached. In this figure it will be seen that the members E F are equipped with gripping-jaws E<sup>2</sup> E<sup>3</sup> F<sup>2</sup> F<sup>3</sup> on their front faces, projecting beyond the plane of the secondary levers sufficiently to engage with their properly toothed grooved gripping-surfaces the wire which the tool is designed to grip. These jaws being outside of the secondary levers the tool can be attached to the wire at any desired point, as the latter is not passed through the tool, but lies closely against its face when in the gripping-jaws. I do not extend the cutting-jaws on this side of the tool beyond the plane of the members, but have them flush with each other, so as to present no point of interference with the wire. In order to give the upper gripping-jaws sufficient strength and not interfere with the opening below the cutting-jaws, I prefer to have their inner surfaces flush with the outer faces of the members, but build them outward, slanting them off on each side toward the outer edges of the members. The lower gripping-jaws, however, I extend into the interior of the tool in order to give sufficient strength to these jaws. On the lower portions of the members I make provision by means of lugs, as shown by F<sup>4</sup>, for attaching a chain to the members by hooking it in a hole provided in each of the lugs E<sup>4</sup> F<sup>4</sup> for that purpose. To this chain is attached the rope running to the horse or other power employed for stretching the wires, the strain on the chain or rope drawing the members powerfully together. The supplementary or gripping jaws working parallel to each other and engaging the wire at two points a firm and strong hold is secured. Two sets of secondary levers being stationed on the tool great strain may be put upon the supplementary jaws without twisting the tool or bending the secondary levers, as one set supports the other, even though the strain is applied to the outside of these levers. All the twisting strain is taken by the pins, and these I make of sufficient strength to easily withstand it.

Modifications may be made without departing from the principle or sacrificing the advantages of my invention.

Parts of the construction shown may be used without others, and I may reverse the position of various parts.

What I claim is—

1. In parallel pliers, uncrossed primary levers and crossed secondary levers, working in conjunction with each other, all equipped to close the jaws upon the closing of the handle-levers, substantially as set forth.

2. Parallel pliers with uncrossed primary and crossed secondary levers engaged with jaw-carrying members suspended within the said primary and secondary levers, all equipped with means and coacting with said means to produce parallel movements of the

said members toward each other or away from each other, relatively, upon the respective closing or opening of the handle-levers, substantially as set forth.

3. In parallel pliers, sets of primary and secondary levers, one of which is crossed while the other is uncrossed, jaw-carrying members suspended within such levers parallel to each other, by means of pins, slots in the said members through which connection is made between the said secondary levers at one extremity and in pivotal connection at the other extremity by means of the said pins, the said secondary levers joined by a fulcrum-pin, all arranged for simultaneous action and to give the members a parallel motion, one toward the other as the primary levers are pressed together, substantially as set forth.

4. In parallel pliers, uncrossed primary levers, each lever independent of its companion by direct connection, working in conjunction with crossed secondary levers, their lower extremities connected by pins through slots carried in the primary levers and in jaw-carrying members and their upper extremities positively pivoted to each other, in pairs, and to the said members, the primary levers connected to the said members by their upper extremities and imparting motion to the said members and secondary levers by means of slots, all arranged to force the jaws carried on the said members toward each other upon the closing of the primary levers, and to keep them in parallel position at all times, substantially as set forth.

5. In parallel pliers, levers attached to jaw-carrying members, wire-grips attached to the said members on their faces and extending beyond the plane of the levers, substantially as set forth.

6. In parallel pliers, levers engaged with jaw-carrying members equipped with gripping-jaws carried in sets mounted upon the faces of the said members, and extending outwardly therefrom beyond the plane of the said levers, all equipped to insure parallel movements of the said members and jaws, substantially as set forth.

7. In parallel pliers, jaw-carrying members equipped with a plurality of parallel-moving jaws, the auxiliary jaws extending beyond the plane of levers connected to the said members, so as to give an unobstructed opening for the introduction of a wire or other substance into the said auxiliary jaws, all equipped to insure the parallel movement of the several sets of jaws, substantially as set forth.

In testimony whereof I, HERMAN G. WEIBEZAHN, have signed my name to this specification, in the presence of two subscribing witnesses, this 9th day of May, 1901.

HERMAN G. WEIBEZAHN.

Witnesses:

CHARLES S. KOHLER,  
THOMAS T. CROTTY.