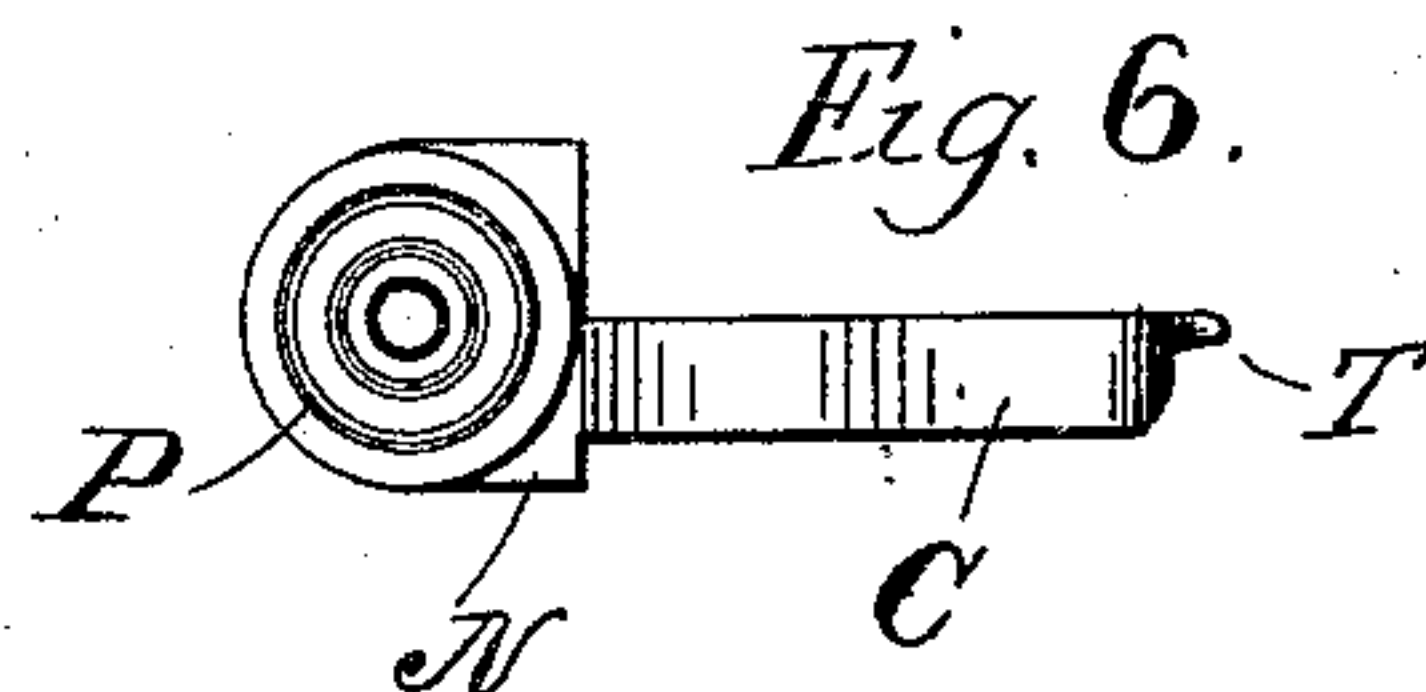
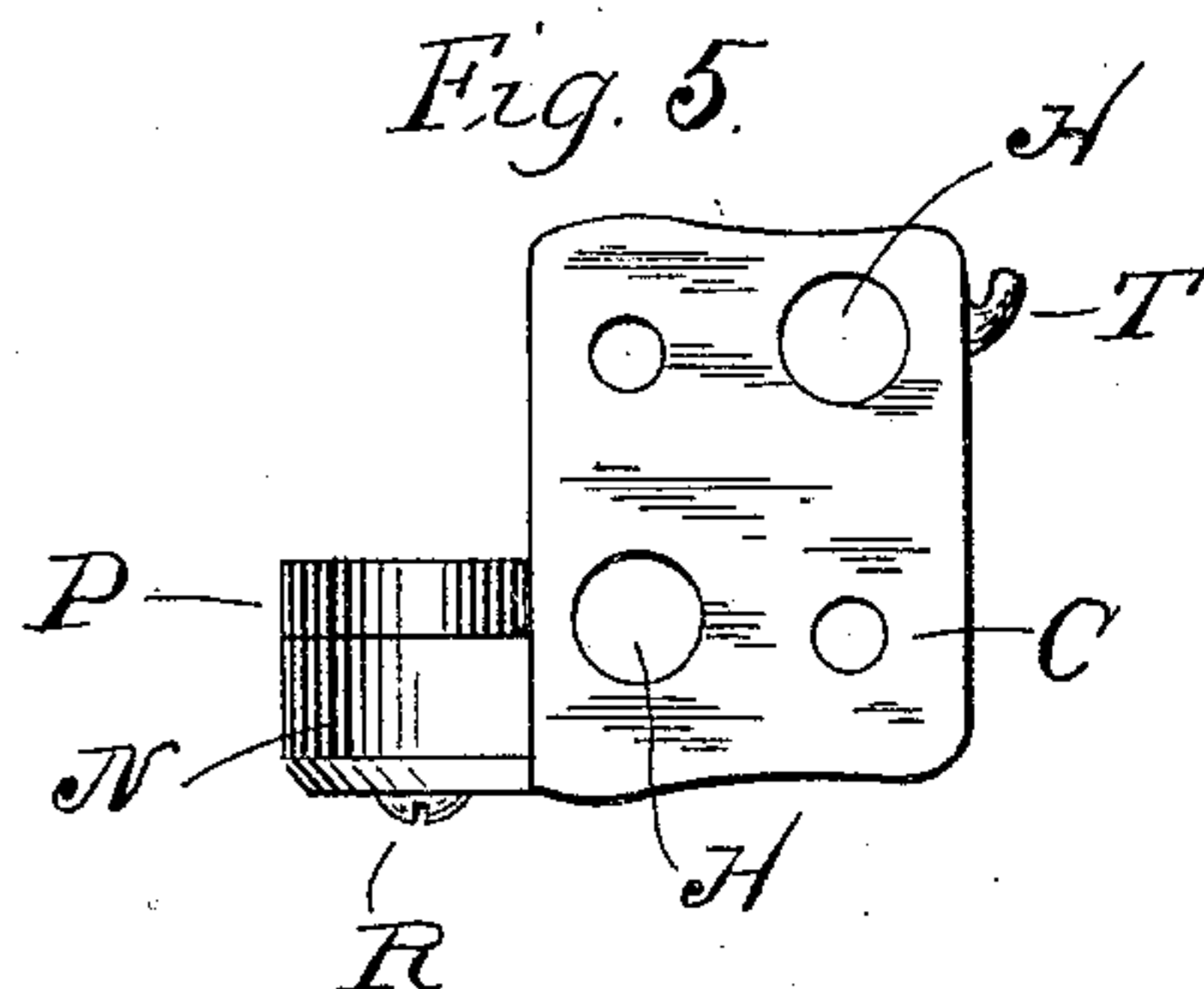
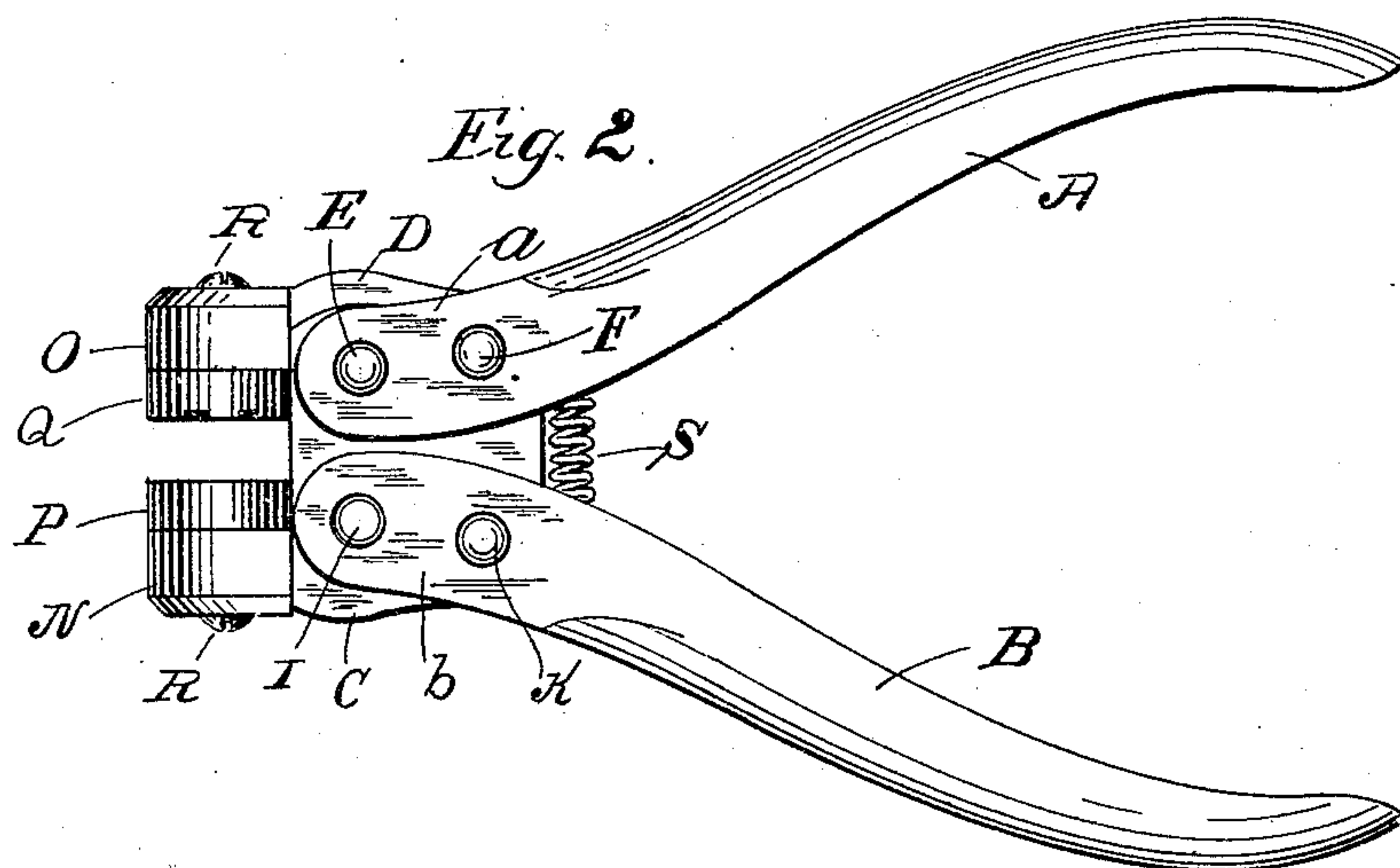
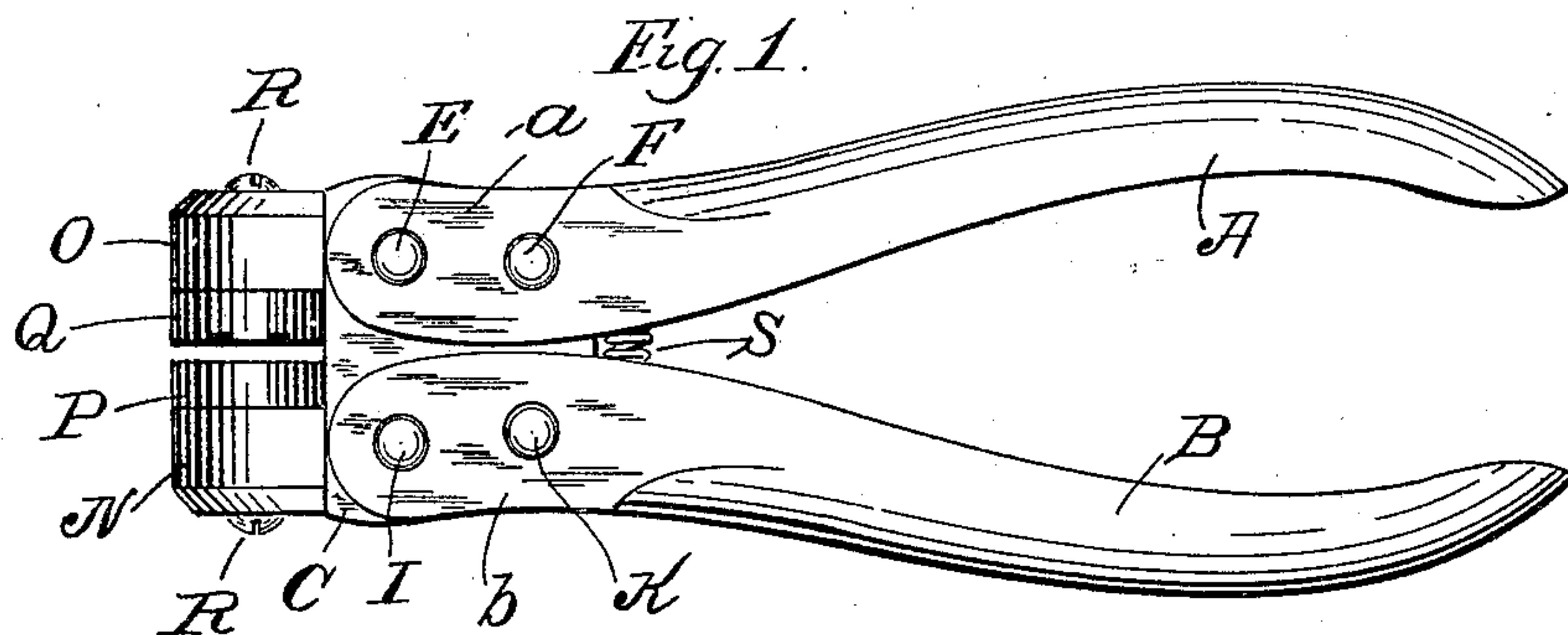


W. A. BERNARD.  
PLIERS AND SIMILAR TOOL.  
APPLICATION FILED APR. 13, 1908.

945,012.

Patented Jan. 4, 1910.  
2 SHEETS—SHEET 1.



WITNESSES:  
J. S. Coffman  
M. Olive Williams

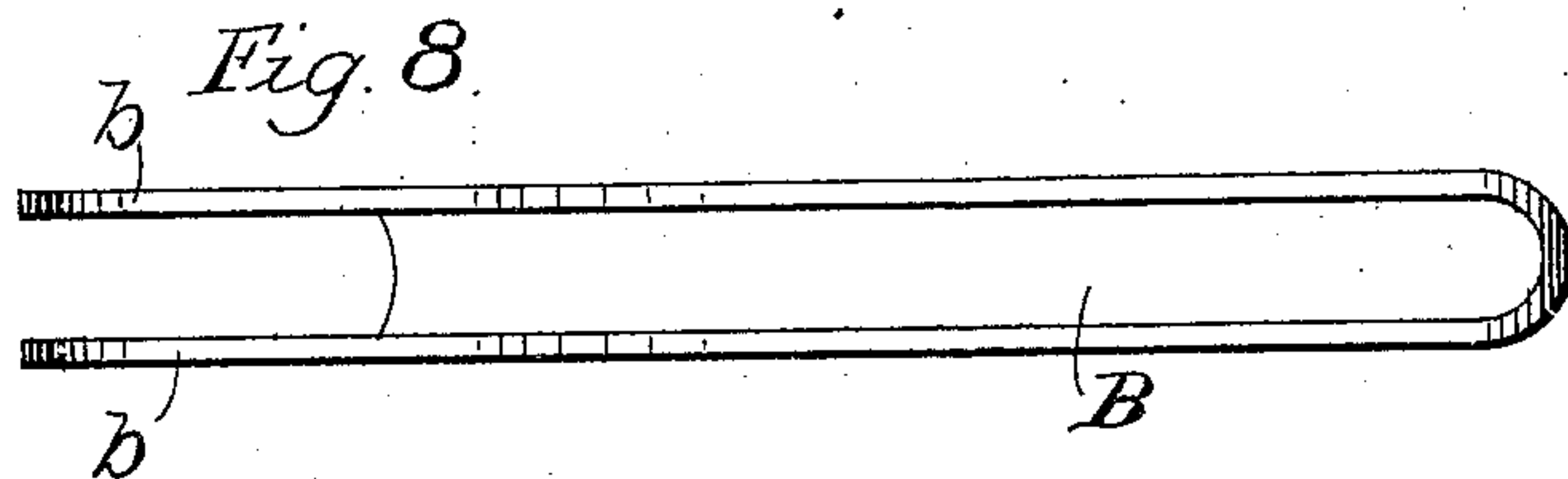
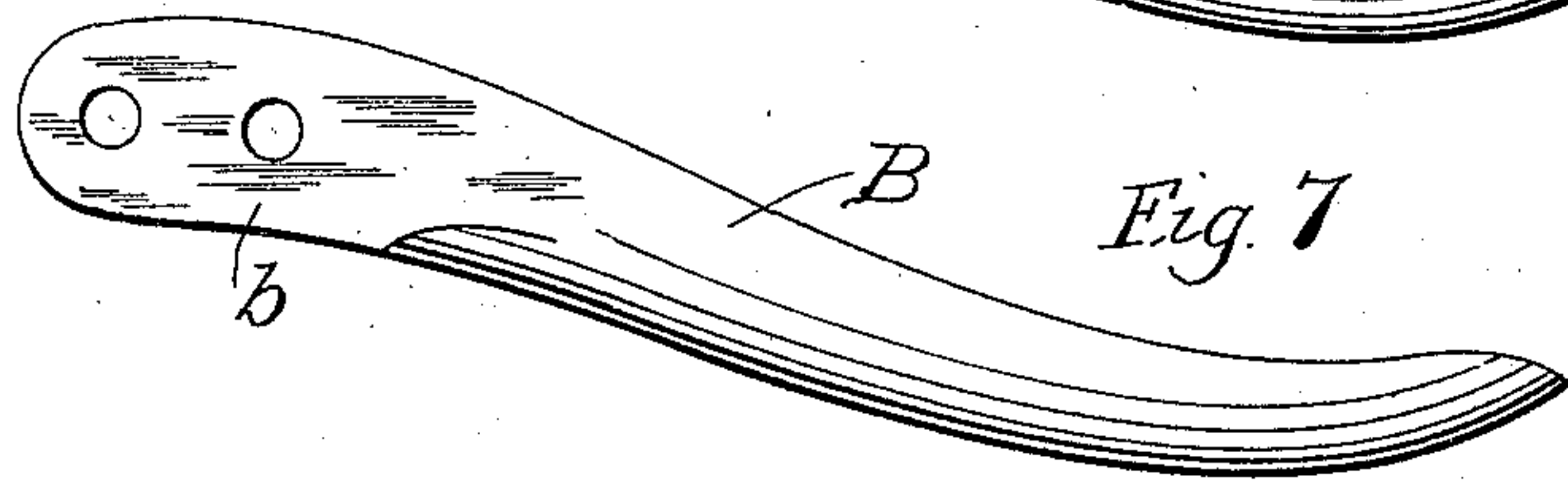
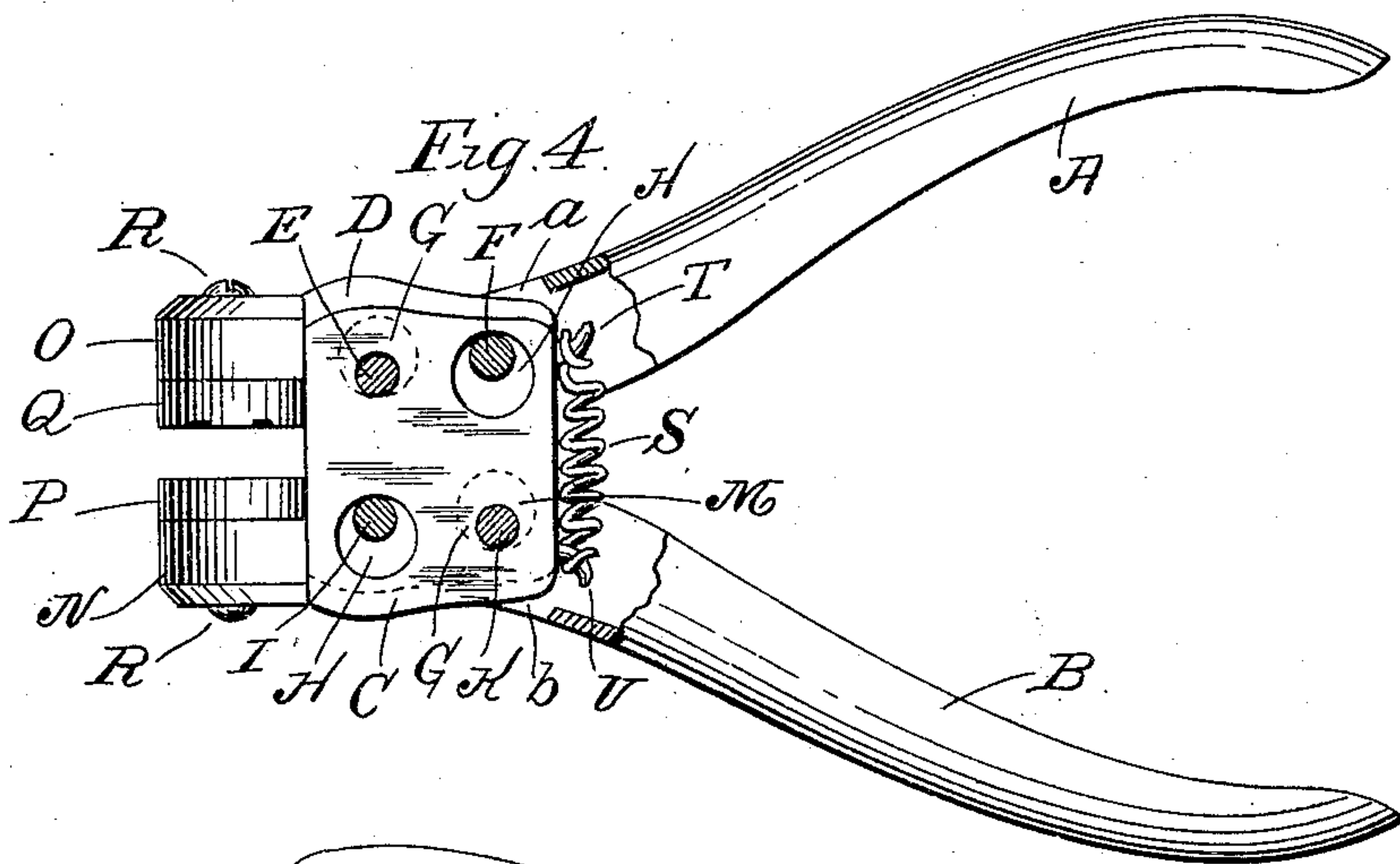
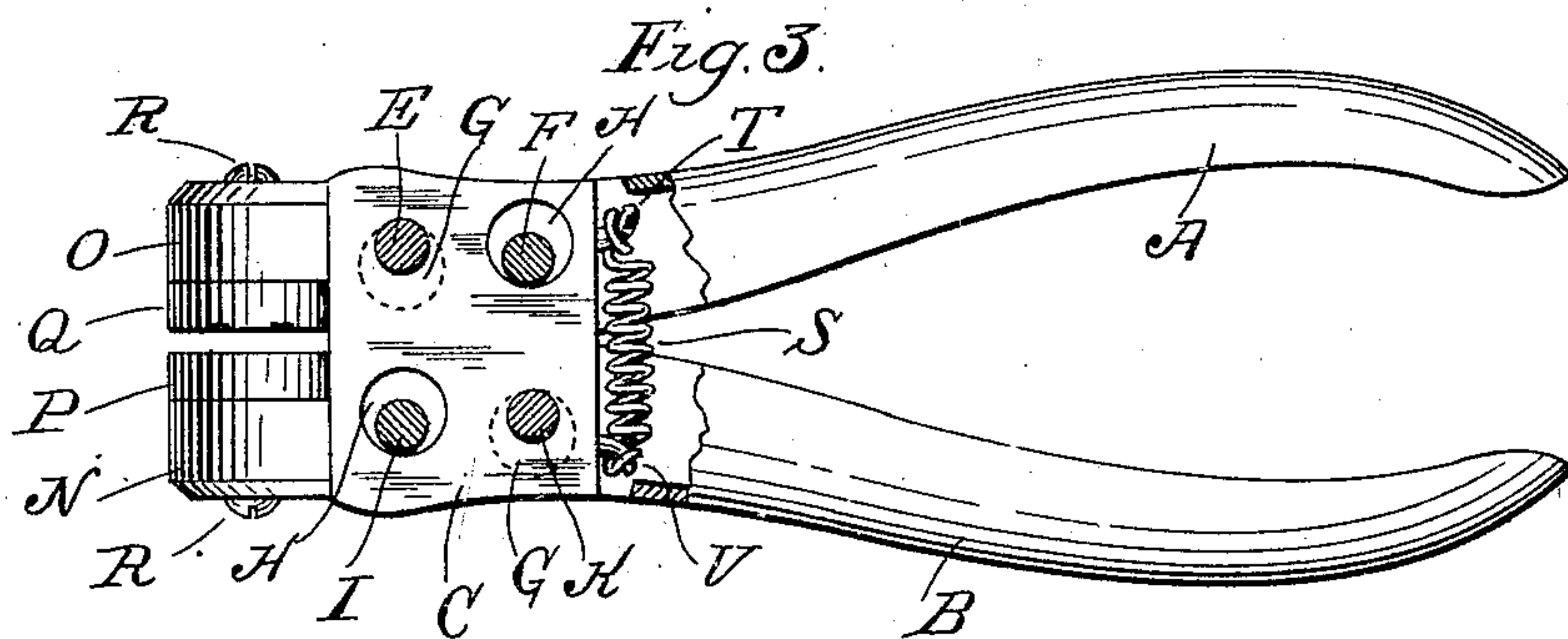
INVENTOR.  
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BY  
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W. A. BERNARD.  
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Patented Jan. 4, 1910.

2 SHEETS—SHEET 2.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLIAM A. BERNARD, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE WILLIAM SCHOLLHORN COMPANY, OF NEW HAVEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

PLIERS AND SIMILAR TOOL.

945,012.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed April 13, 1908. Serial No. 426,813.

*To all whom it may concern:*

Be it known that I, WILLIAM A. BERNARD, of the city and county of New Haven and State of Connecticut, have invented new and useful Improvements in Pliers and Similar Tools, of which the following is a full, clear, and exact description, when taken in connection with the accompanying drawings, which form a part thereof.

This invention relates to pliers and similar tools operable by handles, and has for its object the production of a tool of this type, simple in construction, few in the number of the parts, readily assembled, and efficient in operation. In this construction, the operating levers or handles are not required to cross each other, but each is separately pivoted to two actuating members which cross each other (without pivotal connection) and actuate the jaws. The pivotal connection between the actuating members and levers or handles is reversed in order at each handle, that is, one handle is connected forwardly with one member and the other handle is connected rearwardly with this same member and vice versa. By this construction, the levers or handles have a certain rocking motion which moves the actuating members past each other at right angles to the axis of the tool. The jaws if affixed to the actuating members, as shown in the drawings, are given a parallel movement to and from each other. The leverage is very greatly increased in this form of tool.

In the particular form shown in the drawings the levers or handles are duplicates, and the two actuating members are also duplicates and have the jaws rigidly secured thereto, so that there are practically but four parts to be assembled, two of which are duplicates of the other two.

To these and other ends the invention consists of the improvements and combinations of parts set forth and claimed hereinafter.

Referring to the drawings, Figure 1 represents a side elevation of a plier or similar tool embodying the invention, the lever handles being shown in their closed position, Fig. 2, a similar view with the lever handles and jaws shown in their open position, Fig. 3, a view corresponding to Fig. 1, partly broken away, so as to show the connection

between the lever handles and the actuating members, Fig. 4, a similar view of the parts in the position shown in Fig. 2, Figs. 5 and 6, a side elevation and an edge view, respectively, of one of the actuating members and jaws, in detail, and Figs. 7 and 8, a side and an edge view, respectively, of one of the lever handles, in detail.

In all figures, similar letters of reference represent like parts.

The parts designated by the letters A and B represent hollow sheet metal operating levers or handles having projecting at their forward ends parallel attaching plates *a* and *b*. Between the parallel attaching plates *a* and *b* are adapted to fit side by side actuating members C and D. The lever or handle A is pivotally connected at or near the forward end of the parallel plates *a*, as at E, with the sliding member C, and at a point, as at F, rearward of the pivot E with the sliding member D. On the other hand, the attaching plates *b* of the lever or handle B are pivotally connected forwardly at I to the member D and rearwardly at K to the member C, so that the order of connection is reversed on each lever. By this construction if a straight line be drawn between the pivotal connections of each actuating member, the two lines on the two members would cross each other. The actuating members C and D are shown in the drawings as substantially flat rectangular plates and each is provided with enlarged circular perforations G and H for the movement of the fulcrums or pivot pins of the other member. The perforations G of the member D are shown in dotted lines in Figs. 3 and 4.

At the forward end of each of the actuating members C and D are offsets N and O which may form the gripping parts or jaws of the tool, or, as shown in the drawings, act as supports for dies P and Q, which are secured to the offsets by screws R, or other suitable means. These dies are provided with markings to make the desired impression upon the article gripped, as, for example, the lead seals used on freight cars, and for other purposes.

A coiled spring S is attached to lugs T and U on the rear of the actuating members C and D, respectively, and tends to hold the



members C and D normally in the position shown in Figs. 2 and 4, in which the tool is open.

The actuating members C and D are preferably of the form shown in order that the jaws or offsets N and O may be located on such part of them that as the handles are closed the jaws or offsets are moved together. The two members C and D are flat and the normal strain on them is edgewise. At the same time, they are held against any lateral or twisting strain by the two attaching plates *a* and *b* on either side of them. The movement of the jaws or offsets N and O is at right angles to the axis of the tool and their gripping surfaces are always parallel to each other. The actuating members C and D are interchangeable and the lever handles A and B are also, so that the tool requires but two pairs of parts (exclusive of pivot pins and dies) each pair being identical with the other. The parts may be readily assembled and the leverage acquired by this construction is far greater than in the well known single fulcrumed tool.

Having now described my invention (which may vary in its details without departing from the spirit thereof), what I claim and desire to secure by Letters Patent, is:

1. In pliers, punches and similar articles, the combination with operating levers; of actuating members disposed side by side and each having a separate pivotal connection with each of said levers; and means on said members for yieldingly drawing them into their open position, substantially as described.

2. In pliers, punches and similar articles, the combination with operating levers; of actuating members disposed side by side and each having a separate pivotal connection with each of said levers; and a yielding connection between said members to impel them in opposite directions, substantially as described.

3. In pliers, punches and similar articles, the combination with operating levers having no common fulcrum; of actuating members having a sliding relation with each other, and each having a separate pivotal connection with each of said levers, substantially as described.

4. In pliers, punches and similar articles, the combination with operating levers, each having parallel plates extending forwardly on the same side of the axis of the tool; of actuating members located between said

plates and each having a separate pivotal connection with the plates of each lever, substantially as described.

5. In pliers, punches and similar tools, the combination with operating levers, each having a plurality of parallel forwardly projecting plates; of actuating members disposed side by side within said plates and each having a separate pivotal connection with the plates of each lever, substantially as described.

6. In pliers, punches and similar articles, the combination with operating levers; of flat actuating members having a sliding relation with each other; and each having a separate pivotal connection with each lever and an opening for the movement of the pivots of the other member, substantially as described.

7. In pliers, punches and similar articles, the combination with operating levers, each having a plurality of parallel forwardly projecting plates; of actuating members disposed side by side within said plates; and pivot pins connecting each pair of plates separately with each member, substantially as described.

8. In pliers, punches and similar articles, the combination with operating levers; of actuating members being disposed side by side and having a sliding relation with each other; and jaws, said actuating members being impelled in opposite directions by the movement of said levers and said jaws retaining a position substantially parallel to each other, substantially as described.

9. In pliers, punches and similar articles, the combination with operating levers; of actuating members disposed side by side each having a separate pivotal connection with each other, a sliding relation with each other, and impelled in a direction at right angles to the longitudinal axis of the tool, substantially as described.

10. In pliers, punches and similar articles, the combination with operating levers; of actuating members disposed side by side, having a sliding relation with each other and each having a separate pivotal connection with each of said levers, substantially as described.

In witness whereof, I have hereunto set my hand on the 9th day of April, 1908.

WILLIAM A. BERNARD.

Witnesses:

SAMUEL H. FISHER,  
M. OLIVE WILLIAMS.