

(No Model.)

S. O. ROOT.
PLIERS.

No. 477,066.

Patented June 14, 1892.

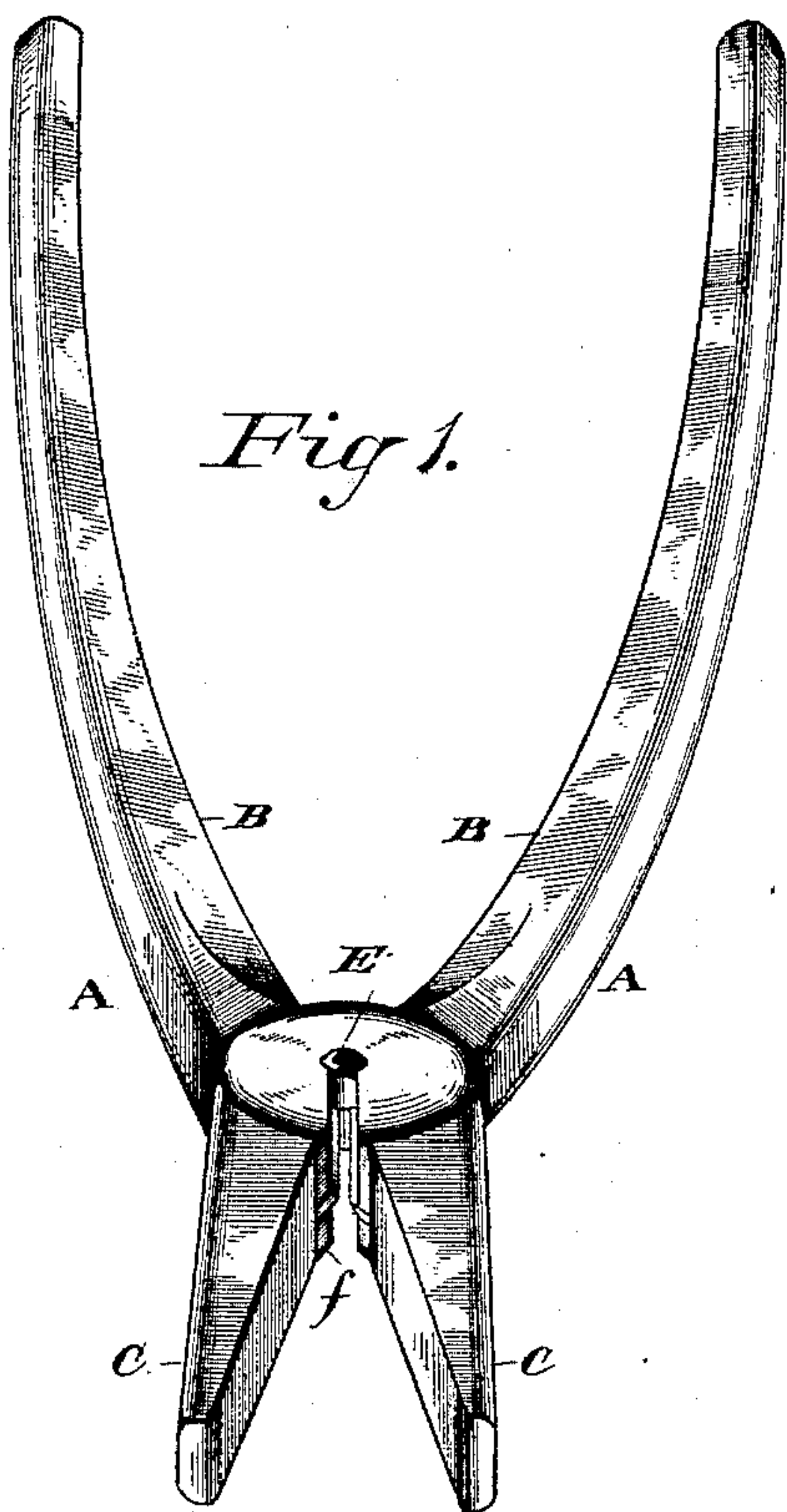


Fig 1.

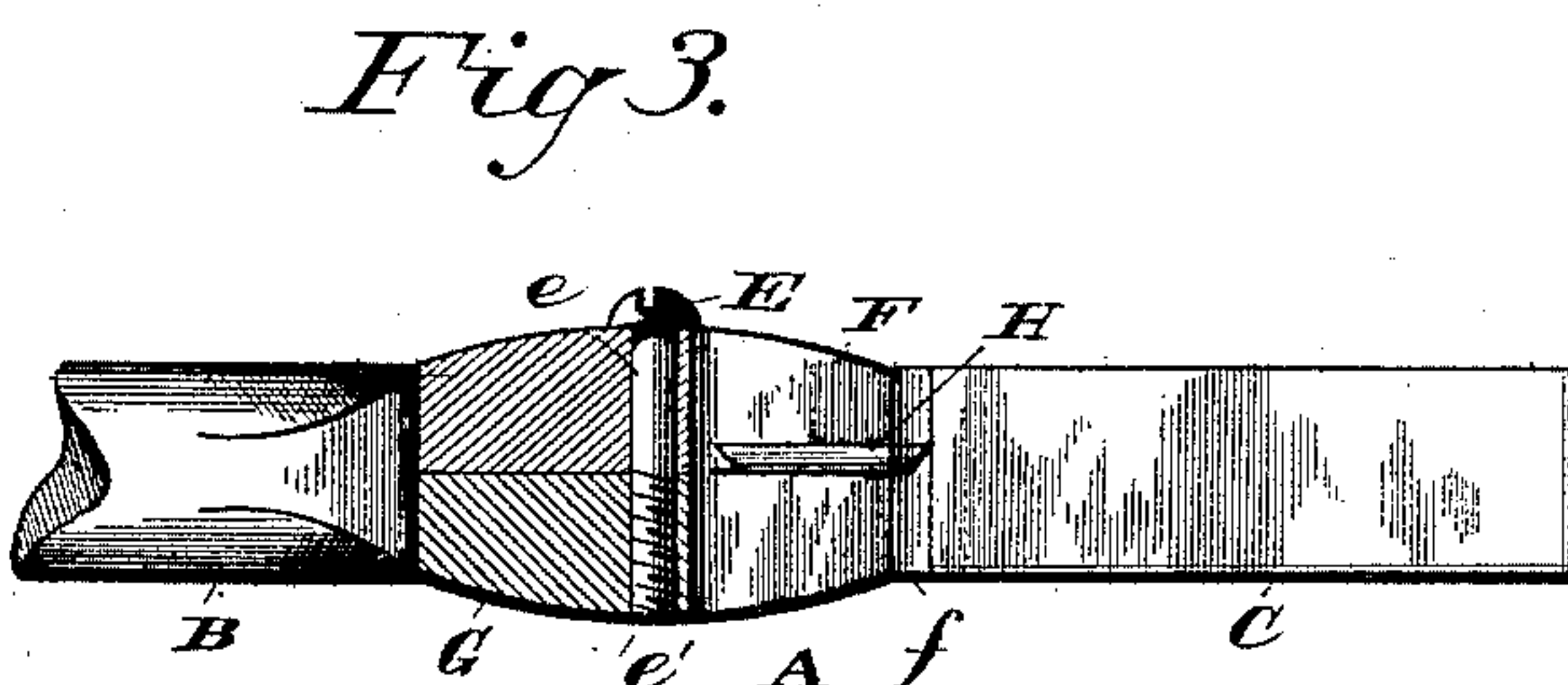


Fig 3.

Fig 4.

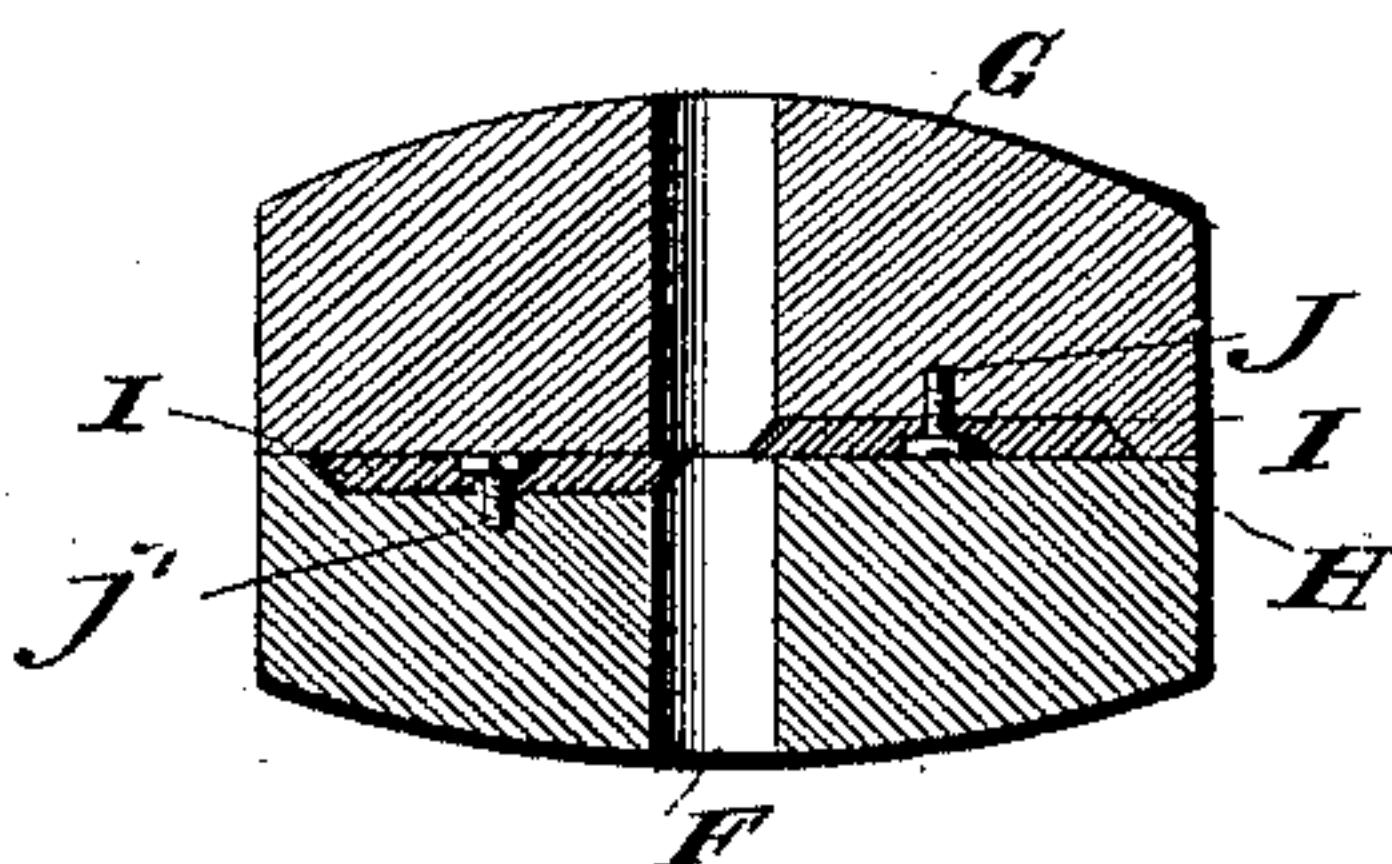


Fig 2.

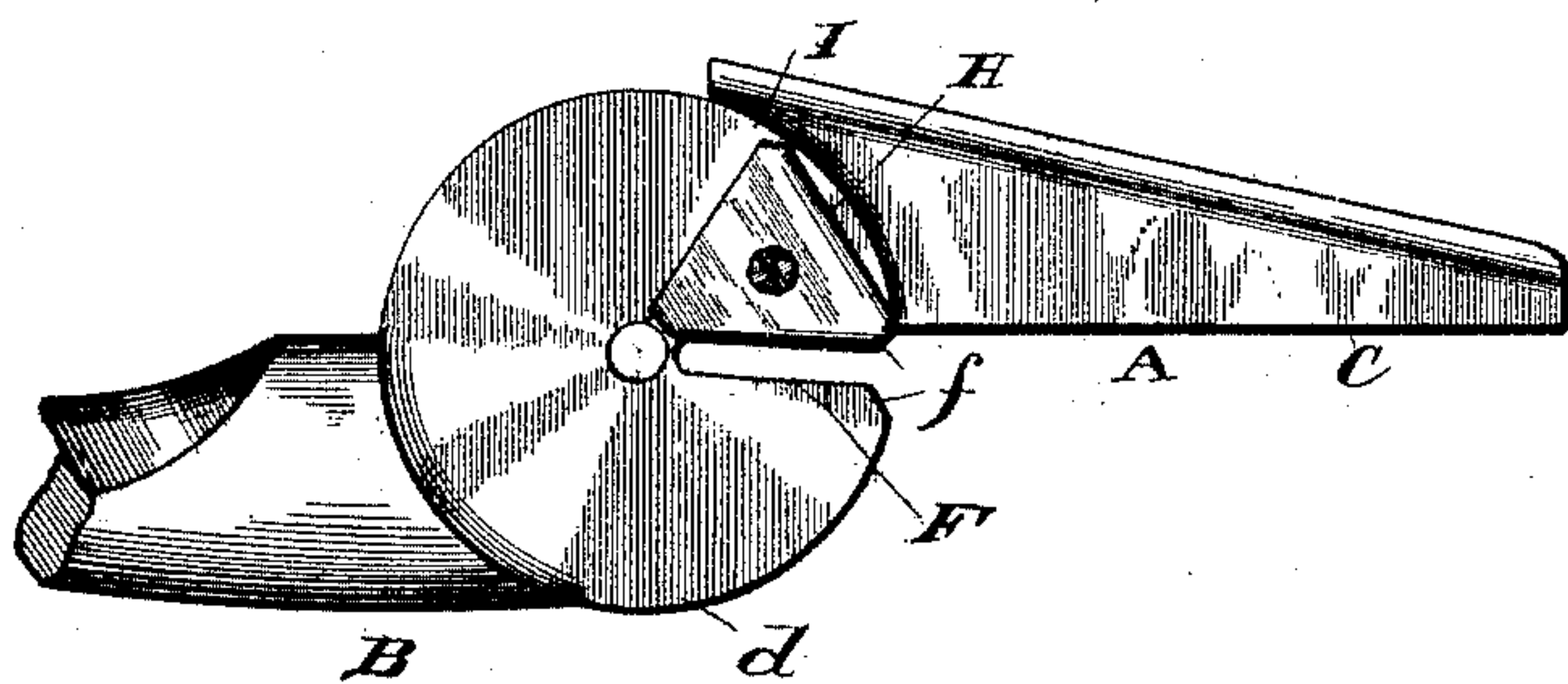
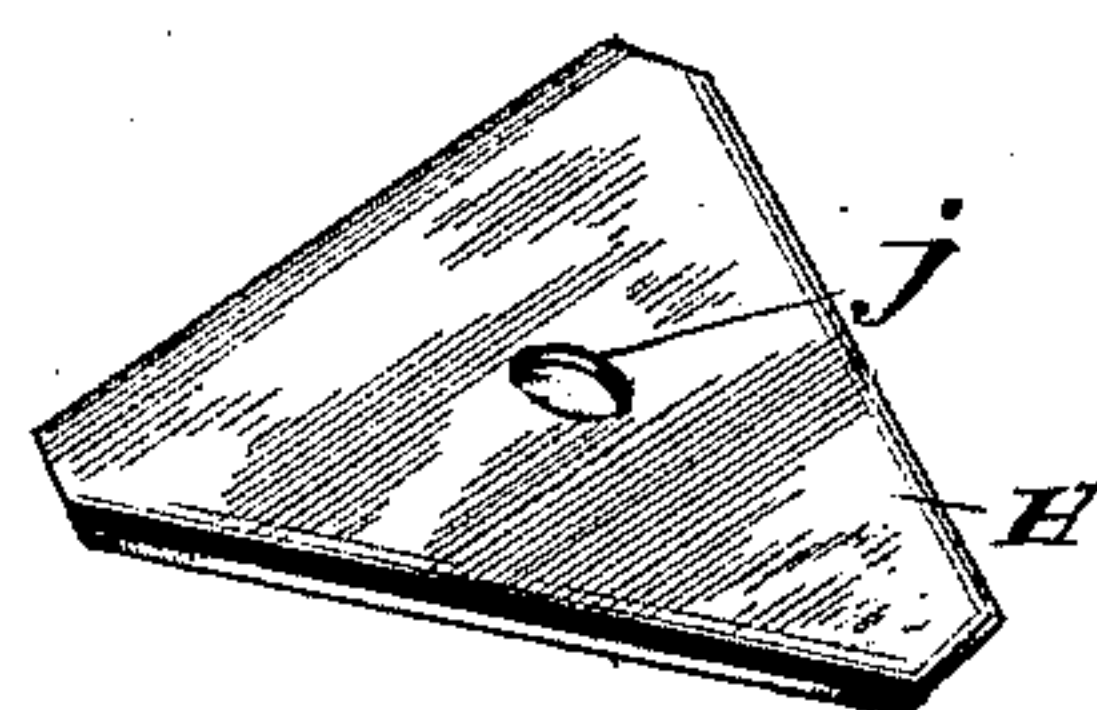


Fig 5.



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UNITED STATES PATENT OFFICE.

SANFORD O. ROOT, OF LODI, NEW YORK.

PLIERS.

SPECIFICATION forming part of Letters Patent No. 477,066, dated June 14, 1892.

Application filed November 10, 1891. Serial No. 411,536. (No model.)

To all whom it may concern:

Be it known that I, SANFORD O. ROOT, a citizen of the United States, residing at Lodi, in the county of Seneca and State of New York, have invented certain new and useful Improvements in Pliers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it ap-
10 pertains to make and use the same.

This invention relates to pliers of that class embodying in connection therewith nippers or cutting-jaws; and it has for its object to provide a tool of this class having removable, interchangeable, and reversible cutters provided with a number of cutting-edges, where-
15 by said cutters can be adjusted to bring a new cutting-edge into play when one edge has become worn, and to enable the substitution of new cutters when desired.

A further object of the invention is to produce a simple and improved tool of this character in which the cutters are brought into close proximity to the center of the fulcrum, thus reducing the power required to a minimum and at the same time not detracting
25 from the durability or strength of the tool.

To this end my invention consists, substantially, in the construction, combination, and arrangement of parts, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a perspective view of a pair of pliers embodying my invention. Fig. 2 is an enlarged detail plan view of the inner face of one of the members. Fig. 3 is a detail sectional view taken on the line *x x*, Fig. 1. Fig. 4 is a similar view on the line *y y*, Fig. 3. Fig. 5 is a detail perspective view of one of the cutters.
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Corresponding parts in the figures are denoted by the same letters of reference.

Referring to the drawings, A A designate the two members of a pair of pliers, which are preferably constructed of malleable iron and one an exact reproduction of the other. The members A each comprise a handle B, having its body preferably triangular in cross-section, as shown, and a jaw C, of any well-known or preferred construction. Intermediate the jaws and handles and respectively
45 50

connecting the same integrally are circular disks D D, the latter terminating at their inner faces one-half the breadth of the members A below the open side of the latter, forming circular recesses *d d*. Thus when the members are in relative position the disks D fit within the respective recesses and turn therein. The members are secured together by a pivotal screw E, passing through a smooth eye *e*, provided centrally through one of the disks D and secured within a coincident threaded eye *e'* in the other disk.

At the edge of each disk D, adjacent to its jaw C, is provided a transverse radially-disposed slot F, formed at a slight angle to the inner face of the jaw, said slots being so located relative to one another that they coincide when the handles are distended. The slots F are further formed flaring at their open ends, as shown at *f*, Fig. 1, whereby the shoulders, which would ordinarily obstruct the passage between the jaws and slots when the handles are distended, are dispensed with. In practice the slots F extend nearly to the pivotal screw E, and to overcome the weakening of the members and liability of breakage owing to such construction the disks D are reinforced at their outer faces by integral convex bosses G G. The increased thickness of the disks secured in this manner also serves to increase the bearing and securing surface of the pivotal screw, thus imparting greater strength to the tool.

H H designate the cutting-plates, which are triangular in shape and preferably truncated at the apexes, each of the three edges of the plates constituting an independent cutting-edge. The cutting-edges of the plate are formed by beveling the latter from one side, as shown. The cutters are disposed in corresponding sockets or recesses I I, provided in the inner faces of the disks D adjacent to the slots F and so located that one of the cutting-edges of each cutter is parallel and adjacent to one of the side walls of its slot. The cutters are also arranged at opposite sides of the conjunctive slots, opposing and working upon one another. To firmly secure the cutters within the sockets or recesses, each cutter is provided with a central aperture *j* for the reception of a securing-screw J, the latter be-
85 90 95 100

ing screwed into a coincident threaded aperture j' in the disk and having its head countersunk in the cutter.

The operation and advantages of my invention will be readily understood by those skilled in the art to which it appertains. When it is desired to use the nippers or cutters, the handles are distended to bring the slots into alignment, when the wire or other material to be cut is placed therein and the pliers operated in the usual manner. When it is desired to bring a new cutting-edge into play, the pivotal screw and the cutter-securing screw are removed and the cutter removed from its socket and turned to bring one of the unused cutting-edges adjacent to the slot, when the screws are replaced.

While the cutters are designed for a triple use, it will also be obvious that they are likewise interchangeable, thus enabling new cutters to be substituted, when desired, at a comparatively small cost. It will also be obvious that, while the cutters are herein described as triangular in shape, such shape is not essential and any other angular form of cutter may be employed, the sockets being formed to correspond in like manner to the shape of the cutters. For instance, hexagonal cutters may be employed, each having six cutting-edges, said cutters being disposed in hexagonal sockets.

I claim as my invention—

1. As an improvement in pliers, the combination, with the pivoted members comprising coincident countersunk fulcrum-disks provided each with a radially-arranged slot extending nearly to the center of the fulcrum, of removable and interchangeable cutters rigidly secured at the opposing faces of the fulcrum-disks and adjacent to the slots, substantially as and for the purpose set forth.

2. As an improvement in pliers, the combination, with the pivoted members consisting

of handles, jaws, and intermediate fulcrum-disks, the latter being provided with transverse radially-disposed slots and with angular sockets or recesses in their inner faces adjacent to said slots, of removable and reversible cutters corresponding to and secured in said sockets or recesses and formed with three independent cutting-edges, substantially as set forth.

3. As an improvement in pliers, the combination, with the pivoted members comprising handles and jaws, of the intermediate fulcrum-disks integrally connecting the respective handles and jaws and provided each with a transverse radially-disposed slot extending nearly to the center of said disks, reinforcing-bosses formed integral with and provided at the outer faces of said disks for the purpose described, and a pivot-screw disposed centrally through the disks, substantially as set forth.

4. As an improvement in pliers, the combination, with the pivoted members consisting of handles, jaws, and intermediate fulcrum-disks formed integral therewith, said disks being reinforced at their outer sides, a transverse radially-located slot formed in each of the disks and extending nearly to the center thereof, and an angular socket or recess provided in the inner face of each disk adjacent to said slots, of removable and reversible cutters corresponding to and secured in the sockets or recesses, each cutter having three independent cutting-edges, and a pivotal screw passing centrally through the disks, substantially as set forth.

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

SANFORD O. ROOT.

Witnesses:

RICHARD SPEAR,
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