

(Model.)

J. REINERT.

SHEARS.

No. 391,859.

Patented Oct. 30, 1888.

Fig. 1.

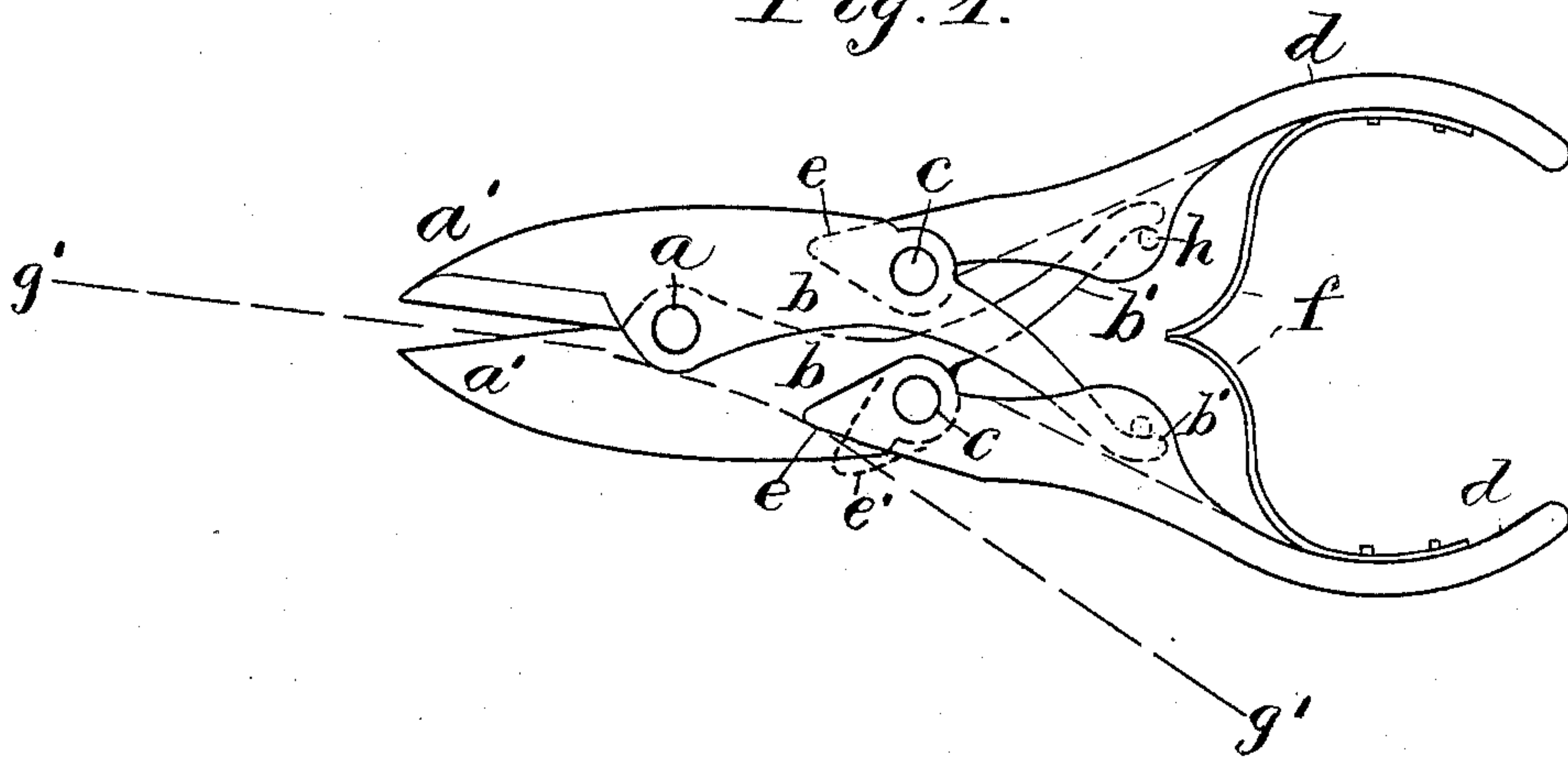


Fig. 3.

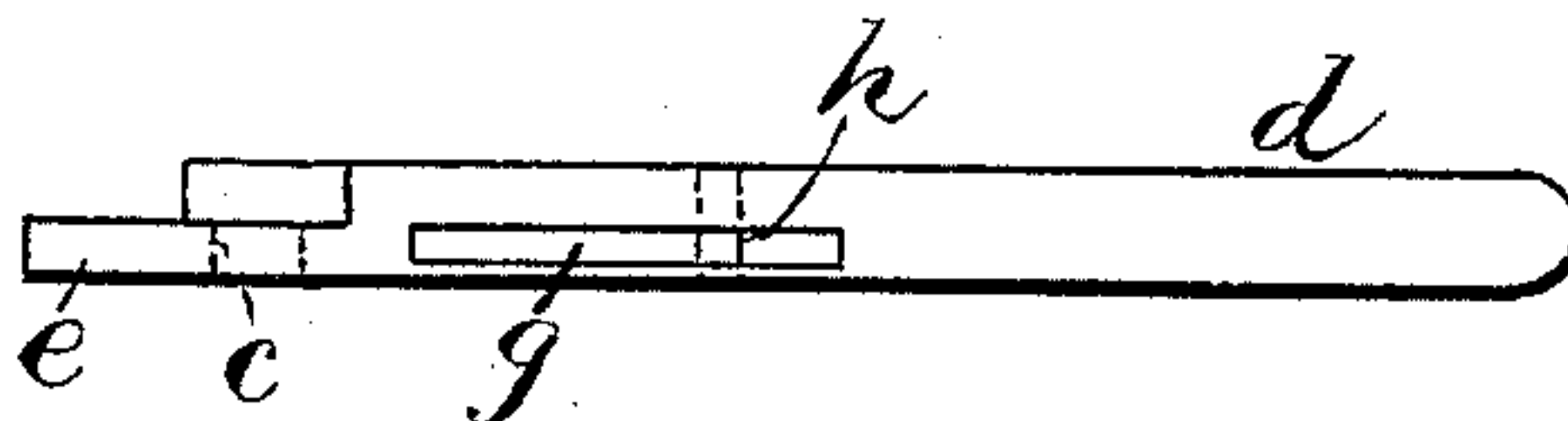
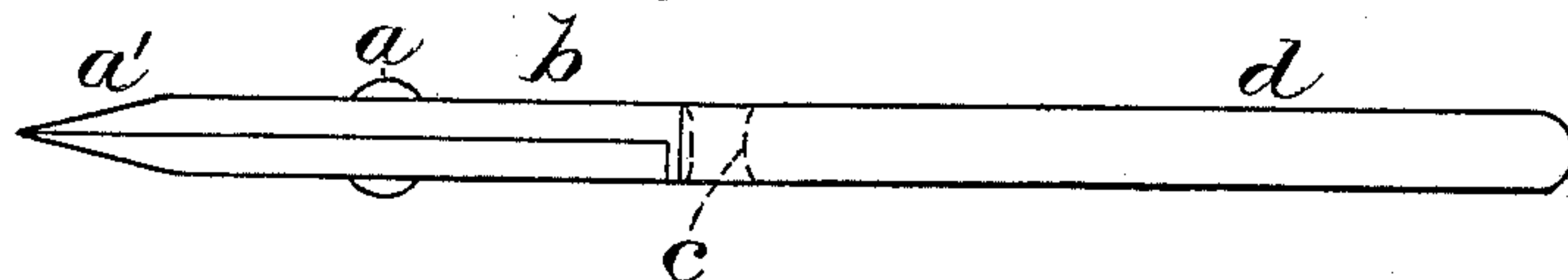


Fig. 2.



Attest:
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Joseph Reinert, per
Crane & Miller, Atty.

UNITED STATES PATENT OFFICE.

JOSEPH REINERT, OF NEWARK, NEW JERSEY.

SHEARS.

SPECIFICATION forming part of Letters Patent No. 391,859, dated October 30, 1888.

Application filed October 29, 1887. Serial No. 253,725. (Model.)

To all whom it may concern:

Be it known that I, JOSEPH REINERT, a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Shears, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of this invention is to furnish a compact and powerful mechanism for operating the jaws of a pair of shears; and the device consists in the combination, with jaw-levers provided each with two pivot-holes intermediate to its ends, of a pivot uniting the bases of the jaws, and handles hinged to the other pivot-holes upon the levers and pressed upon the rear ends of the levers when closing the jaws.

The improvement will be understood by reference to the annexed drawings, in which—

Figure 1 shows a side view of a hand-shears provided with my improvement. Fig. 2 shows an edge view of the same, and Fig. 3 an inside view of one handle detached from the other and the spring omitted.

The jaw-levers are represented by the letter a' , and the letters $b b'$ the lever-arm in the rear of the pivot a , by which the levers are pivotally connected at the base of the jaws.

The handles d are hinged to the arm $b b'$ by pivots c intermediate to the pivot a , and the rear ends of the arms at b' and the inner sides of the handles press upon the rear ends of the lever-arms b' , which are crossed adjacent to the pivots c .

The jaws are shown open in Fig. 1, and the handles pressed apart by springs f , applied between the same. The handles operate as levers of the first order, having their fulcrum against the ends of the arms b' , and pressing the pivots c outward, while the lever-arms b' also operate upon the shear-blades directly as levers of the first order, and indirectly as levers of the second order through the pivots c , the fulcrum being at a and the resistance at c , intermediate to the fulcrum and the ends b' , where the force is applied from the inner sides of the handles. The arms b' have a slight sliding movement upon the inner side of the handles when in operation, and are therefore curved to slide smoothly as the handles assume a variety of angles in operation.

To protect the ends of the arms from catching in loose fabrics when in use, the handles are preferably grooved or slotted upon their inner sides, as shown at g in Fig. 3, and a pin, h , is inserted across the slot to retain the end of the arm therein, so that the arms may be carried with the handles when expanded by the springs. The direct and indirect influence of the handles upon the lever-arms is such as to produce a powerful leverage, so that the jaws may be provided with cutting-edges or punching or gripping tools of any desired kind and operated with great force.

The handles may each be provided adjacent to their pivots with a lug, e , projected toward the shear-blade and lying upon the face of the arm b , along which the sheet-metal would pass when sheared by the jaws a' , as indicated by the dotted line g' in Fig. 1. The pressing of the handles together operates to throw such lug outward against the sheet metal, as shown by the dotted lines e' , extended across the curved line of the metal g' . Such bending of the metal greatly facilitates the advance of the shears in taking a fresh bite, and enables the operator to cut the metal rapidly without bending it abruptly, as is sometimes done in the effort to free it from the jaws to push them forward.

I am aware of United States Patent No. 188,133, dated March 6, 1877, in which cutting-jaws are combined with compound levers by means of four rivets and a pair of plates, which in such construction are required to sustain the rivets. I am also aware of United States Patent No. 228,572, dated June 8, 1880, and No. 298,588, dated May 13, 1884, showing the lever-arms of the jaws combined with toggle-links upon the handles, and I therefore disclaim the mere use of compound levers or toggle-links for operating hinged jaws. My invention has, like those named, lever-arms hinged to the handles, but differs from all previous constructions in having the lever-arms extended in the rear of the pivots to which the handles are attached and crossed to bear upon the inner sides of the handles, so as to operate upon the handle-pivots as levers of the second order. The operation of my device also differs from the constructions in the last-named two patents in holding the jaws at substantially the same distance from the rear

ends of the handles during their entire movement, whereas the effect of hinging the jaws to toggle-links formed upon the handles is to retract the jaws when the handles are pressed together, and to thus pull the jaws backward before and during their operation. When the jaws are provided with punching-tools and it is required to apply the tool to a certain spot in, for instance, a sheet of metal, such retraction of the tool is very inconvenient and liable to cause its application to some other than the intended spot, unless the operator pushes his hand forward when closing the handles or applies the punch with great care to the precise spot before exerting the pressure. In my invention the ends of the handles are nearly in a line with the jaw-pivots *a* and the lever-pivots *c* during the entire operation, and no perceptible retraction of the jaws is caused by the closing of the handles.

As the bearing of the lever arms *b'* upon the interior of the handles is an essential part of my invention, it is obviously immaterial how the ends of the arms are connected with the handles to move therewith when actuated by the spring; and it is also immaterial what form of spring be used to separate the handles, or whether any be employed.

Although I have shown and described my invention herein as applied to a pair of shears, it is evident that the operative mechanism is equally adapted to any other class of tools operated by levers in a similar manner; and I do

not therefore limit myself to the application of such mechanism only to a pair of shears.

I am aware that it is not new to form each of the jaws in a pair of shears with a pivot-hole at the base of the operative portion and another at its inner end, such inner ends being pivoted to the handles for operating the same, as in United States Patent No. 244,614, of July 19, 1881. My construction differs from the latter in having both pivot-holes located intermediate to the ends of each of the jaws, and in being operated by means of a sliding connection between the ends of the jaws and the inner sides of the handles. I therefore disclaim the said United States Patent.

Having thus set forth my invention, what I claim herein is—

In a pair of shears or its equivalent, the combination, with the operative jaws joined by the hinge *a*, of the lever-arms *b b'*, provided each with the intermediate pivots, *c*, and crossed below such pivots, and the handles *d*, hinged to the said pivots and recessed or slotted to receive the ends of the arms *b'*, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOSEPH REINERT.

Witnesses:

THOS. S. CRANE,
L. LEE.