(Model.)

C. MORRILL.

PINCHERS.

No. 356,492. Patented Jan. 25, 1887.

Fig. 1.

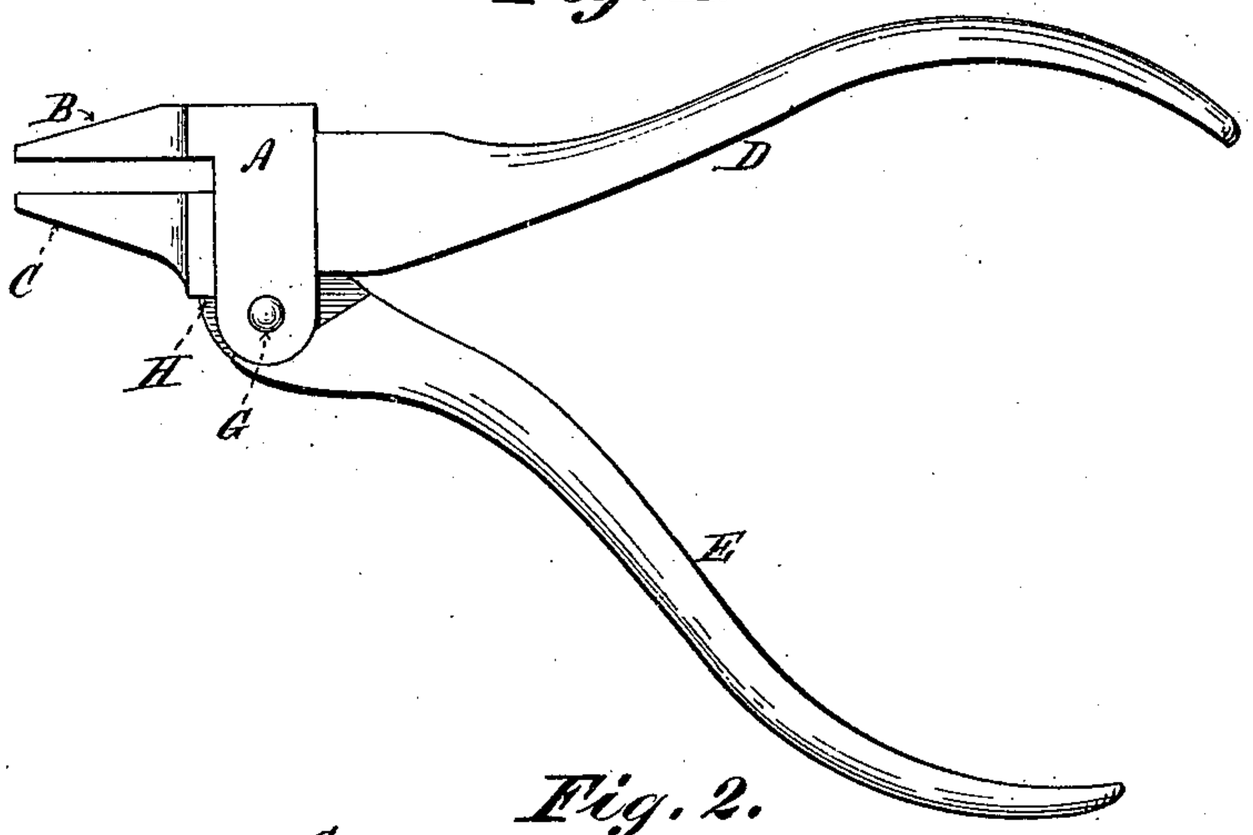

Fig. 2.

Fig. 3.

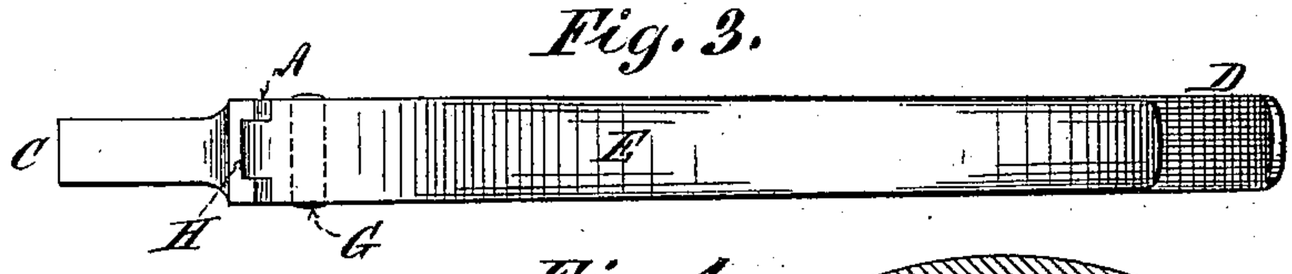

Fig. 4.

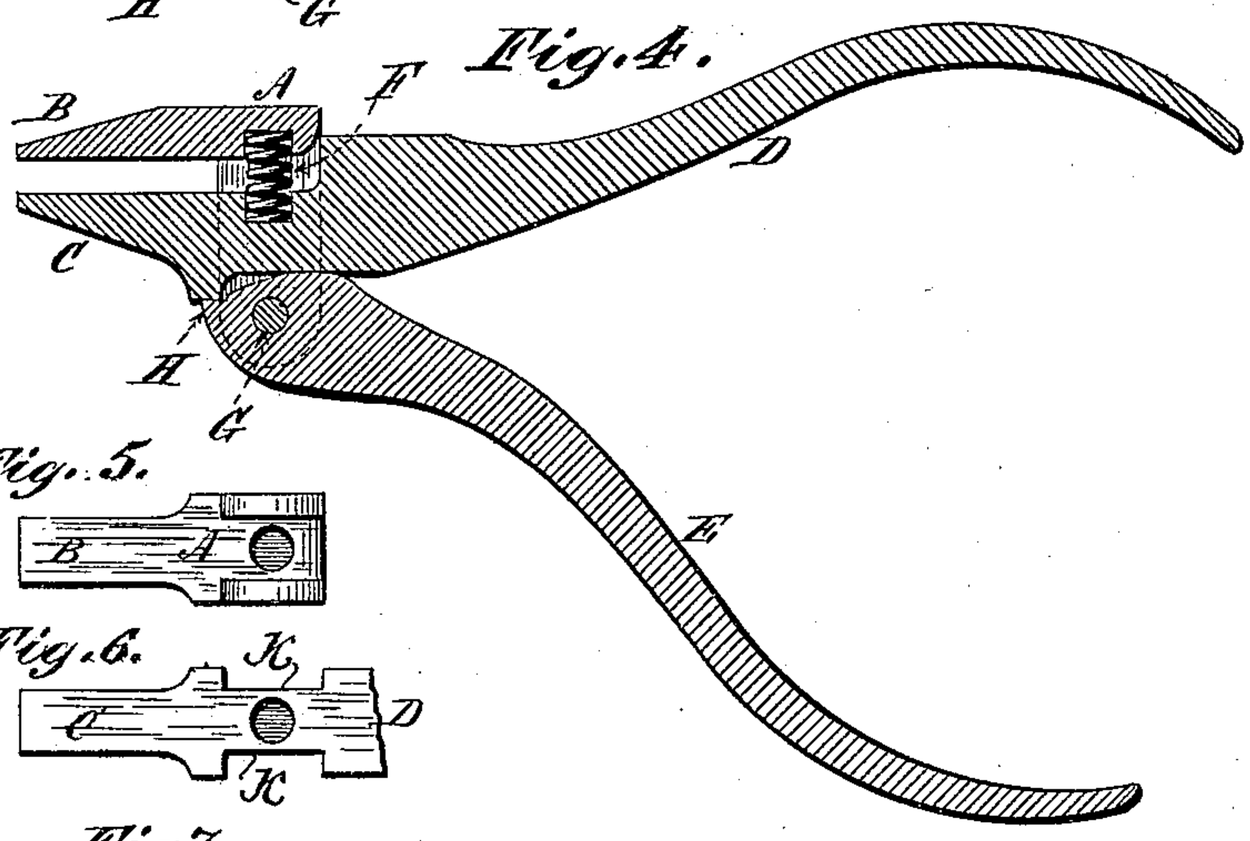

Fig. 5.

Fig. 6.

Fig. 7.

Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES MORRILL, OF JERSEY CITY, NEW JERSEY.

PINCHERS.

SPECIFICATION forming part of Letters Patent No. 356,492, dated January 25, 1887.

Application filed March 23, 1886. Serial No. 196,243. (Model.)

To all whom it may concern:

Be it known that I, CHARLES MORRILL, a citizen of the United States, residing in Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Pliers, of which the following is a description in such full, clear, concise, and exact terms as will enable any one skilled in the art to which my invention belongs to make and use the same, reference being had to the accompanying drawings, making part of this specification, and to the letters and figures of reference marked thereon.

Similar letters of reference indicate corresponding parts in all the figures of drawings.

My invention consists of certain novel parts and combinations of parts constituting an improved pliers or pinchers.

Figure 1 of said drawings is a side elevation of the improved tool aforesaid. Fig. 2 is a top view, and Fig. 3 a bottom view, of the same. Fig. 4 is a cross-section of the tool. Figs. 5, 6, and 7 are detail parts thereof.

The upper jaw, B, is provided at its rear end with pendent gills or slides A A, formed at right angles to the plane of the nipper-jaws, which sliding gills fit accurately in grooves cut in the other jaw-piece to receive them, and are free to move longitudinally therein. These sliding gills are tapped or perforated near their lower ends to receive the pin G. A handle, E, is also perforated to receive the pin G, by means of which it is attached to and held between the lower ends of the sliding gills A A. The upper end of the handle E is shaped to form a cam, resting and operating against the lower side of the handle D. The handle-piece D carries at one end a jaw, C. This handle-piece D, just back of the jaw C, has grooves K K (see Fig. 6) cut in its side, into which the gills A A accurately fit and freely slide. These grooves form slide-bearings for the jaw B, and in them the gills A slide longitudinally when the tool is operated.

The upper-jaw piece on its lower side and the under-jaw piece on its upper side are countersunk to receive and retain in place the spiral spring F, which operates against the force of the cam-lever on the handle E and holds the jaw B normally in its position of greatest elevation. (See Fig. 4.) The lower handle, E, is also provided with a stop projection, H, bearing against the under side of the jaw C, to limit the amount of the departure of the handle E from the handle D, as will be readily understood.

The operation of the tool is as follows: When power is applied to the handles D E to force them together, the cam on the end of the handle E, bearing upon the lower side of the jaw C, causes the two jaws B and C to approach each other, the gills A A sliding in the grooves K K, and thereby keeping the upper jaw always parallel to the lower jaw.

Fig. 5 is a bottom view of the part A B, or upper jaw and sliding gills. Fig. 6 is a top view of the part C D, or the lower jaw and the slide-bearings and the upper handle, and Fig. 7 a similar view of the lower handle or part, E.

I am aware that pliers with parallel jaws have heretofore been made by pivoting one handle to a fulcrum-pin attached to the other handle by straps, and by connecting one end of said fulcrumed handle to one of the jaws of the pliers. As this jaw is designed to travel in straight lines while the end of the fulcrumed lever to which it is attached necessarily describes the arc of a circle in moving, the connection between said handle and said jaw has been formed by means of a pin working in an elongated hole. This is necessary to prevent binding. The power applied to the handle in such a tool is constantly exerted to tilt said jaw and draw it out of a right line, which causes considerable friction and a constant tendency to bind in the grooves in which the jaw travels. The pin and elongated-slot connection between the jaw and its handle is another objectionable feature in said tool. My present invention obviates all these defects.

Instead of operating the jaw by means of an ordinary pivoted lever, I employ a cam-lever. The fulcrum-point of such a lever is not in the same sense fixed and stationary, and it does not, therefore, compel the end of the lever to travel in the arc of a circle. Besides, by means of a cam-lever the fulcrum-point may be made to coincide exactly with the line of travel of the jaw, in which case there will be no tendency exerted by the handle to make the jaw tilt or bind in its bearings, and this greatly increases not only the power, but also the durability of the tool. Instead of a pin and slot, the handle and jaw are connected positively,

so as to entirely prevent independent motion of either part and its consequent disadvantages. The prime distinguishing feature, therefore, which differentiates my plier from that shown in the patent to Arvin, No. 63,356, is the presence in my tool of a lever whose operating end travels in a straight line instead of a curve, thereby permitting the handle and jaw to be joined by a positive connection, as shown.

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

1. In a pliers, a pair of jaws which remain parallel to each other throughout the whole latitude of their travel, combined with guides by means of which the jaws are maintained parallel to each other and a cam-lever attached to one of the jaw-pieces bearing upon but not attached to the other jaw-piece, substantially as and for the purpose set forth.

2. In a pliers, a pair of jaws which remain parallel to each other throughout the whole latitude of their travel, combined with guides by means of which the jaws are maintained parallel to each other, and a cam-lever attached to one of the jaw-pieces bearing upon but not attached to the other jaw-piece, and a stop to limit the vibration of said cam-lever, substantially as and for the purpose set forth.

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