No. 707,418. Patented Aug. 19, 1902.

M. M. HOWLAND.

PLIERS.

(Application filed Feb. 3, 1902.)

(No Model.)

Fig. 1.

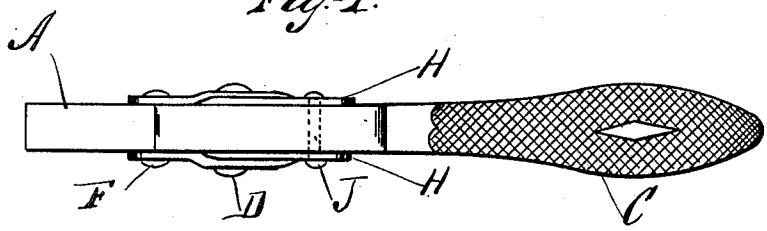


Fig. 2.

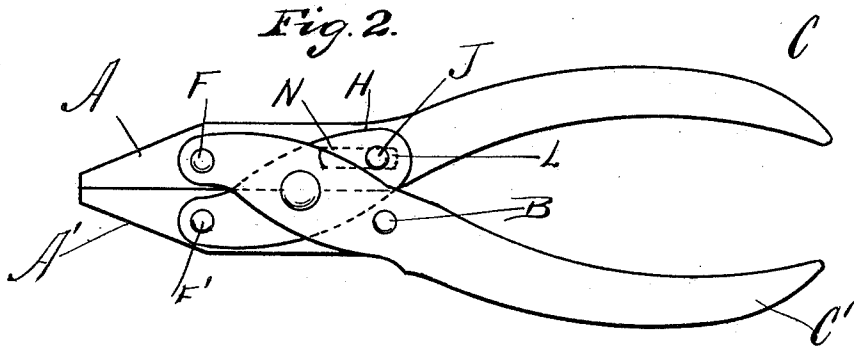
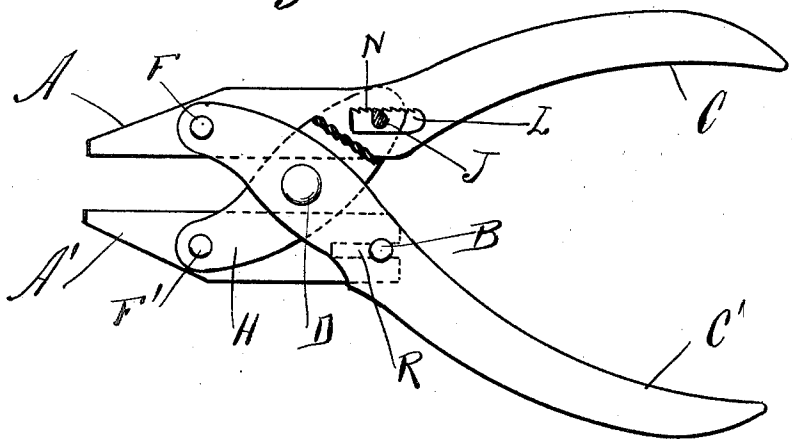


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

MATTHEW M. HOWLAND, OF PROVIDENCE, RHODE ISLAND.

PLIERS.

SPECIFICATION forming part of Letters Patent No. 707,418, dated August 19, 1902.

Application filed February 3, 1902. Serial No. 92,298. (No model.)

To all whom it may concern:

Be it known that I, MATTHEW M. HOWLAND, a resident of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Pliers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in pliers; and its object is to make the pliers serviceable as a wrench and also in a measure as a hand-vise by enabling them to retain a firm hold on an article after the pressure of the hand has been relaxed.

It is fully described and illustrated in this specification and the annexed drawings.

Figure 1 shows a top view of the pliers. Fig. 2 shows a side elevation of the pliers closed. Fig. 3 is a side elevation of the pliers open and a portion broken away to show the locking device.

The invention is shown in the drawings as applied to a pair of parallel-jawed pliers; but though this form is preferable for most purposes the improvement can be adapted to pliers not having parallel jaws. Its construction and mode of operation are as follows:

A and A′ are respectively the upper and lower jaws of the pliers, and C C′ the upper and lower handles. The upper jaw A and upper handle C are made in one piece; but the lower handle C′ is made separate from the lower jaw A′ and is connected to it, so as to control it by means of a pin B, that passes through the handle C at its inner end and through a slot R in the rear end of the jaw A′. The lower handle C′ is made forked at its front end, so as to receive the two jaws between the arms of the fork, and it is pivoted to the upper jaw A by a pin F, that passes through the extreme front ends of the fork and through the jaw. The upper handle C is connected to the lower jaw C′ by means of two plates H H, one on each side, which are pivoted to the lower jaw by a pin F′, that passes through the front ends of the plates and the jaw A′. The rear ends of the plates H are connected to the upper handle C by means of a pin J, that passes through the rear ends of the plates and a slot L in the upper handle C. A main pivot D passes through the two sides of the fork of the lower handle and the middle of the two plates H H and makes a fulcrum over which the two handles operate the jaws. The slot L, which is one of the principal parts of the locking device, has a series of ratchet-teeth on its upper side that are pointed toward the back end of the slot, and the pin J, which is held stationary in the plates H, has one or more ratchet-teeth made on its upper side with their points toward the front end of the slot L, and the pin J has room enough to slide in the slot clear of the teeth N on the upper side of the slot when necessary.

In using the pliers the jaws A A′ are opened by the handles C C′, which naturally brings the toothed pin J to the bottom of the slot L, and it moves forward in the slot clear of the teeth N on the upper side of the slot, and when the jaws are closed by the handles the toothed pin J slides back in the slot on the teeth N without catching, because the teeth are inclined that way; but if it is attempted to open the jaws by their front ends the toothed pin J is instantly thrown up against the upper side of the slot L and the teeth on the pin catch in the teeth N in the slot and all motion of the pin forward is prevented and the jaws are locked from opening.

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

1. In pliers, the combination of an upper jaw and handle made in one piece, a lower handle having a fork at its front end pivoted to the upper jaw, a lower jaw held in said fork and connected with the upper handle by a plate, or plates pivoted to the lower jaws at their front ends, and connected to the upper handles by a pin passing through the plates and a slot in said handle, means to prevent said pin from moving in said slot when the jaws are opened by their front ends, a main pivot passing through said plates and fork, substantially as described.

2. In pliers, the combination of an upper jaw and handle made in one piece, a lower handle having a fork at its front end pivoted to the upper jaw, a lower jaw held in said

fork and connected with the upper handle by a plate, or plates, pivoted to the lower jaw at their front ends and connected to the upper handles by a pin passing through the plates, and a slot in said handle, teeth made in the upper side of said slot, one or more teeth made in said pin, a main pivot passing through said fork and the plates, substantially as described.

3. A device of the character described, comprising a one-piece jaw and handle member; a separate handle member pivoted at one end to said member near its jaw portion; a separate jaw member having a slot at its inner end portion; a pin on the said handle member engaging the walls of said slot and slidable therein; said jaw and handle member having a slot at an intermediate portion; and a connecting member having a pin at one end slidable in said last-mentioned slotted portion; the connecting member having its other end pivoted to said separate jaw member at an intermediate part thereof; said separate handle member being pivoted intermediate of its said attaching parts to the intermediate part of the said connecting member.

4. In a device of the character described, the combination of a jaw and handle in one piece, a separate jaw, a separate handle, means for giving said jaws a parallel motion, and means for automatically locking the jaws on an object in the same.

5. In a device of the character described, a jaw and handle in one piece, a separate handle, a separate jaw, means for giving said jaws a parallel motion, in combination with means for automatically locking said jaws.

6. In parallel pliers, a jaw and handle in one piece, a separate jaw, a plate or plates having pins in each end engaging said separate jaw and said one-piece jaw and handle, and a separate handle pivoted on said separate jaw and the one-piece jaw and handle.

7. In parallel pliers, a jaw and handle in one piece, a separate jaw, a plate or plates having pins in each end engaging said separate jaw and said one-piece jaw and handle, a separate handle pivoted on said plate or plates having pins engaging said separate jaw and the one-piece jaw and handle, substantially as described.

In testimony whereof I have hereunto set my hand this 1st day of February, A. D. 1902.

MATTHEW M. HOWLAND.

In presence of—
BENJ. ARNOLD,
M. L. HAZARD.