R. E. GREGG.

PARALLEL JAW PLIERS.

APPLICATION FILED JAN. 17, 1912.

1,038,745. Patented Sept. 17, 1912.

Fig. 1.

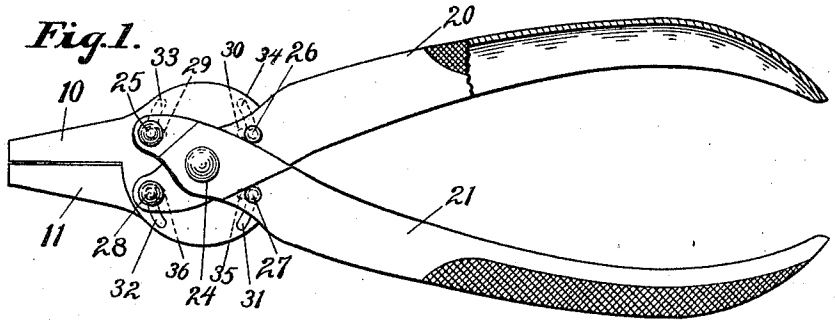


Fig. 2.

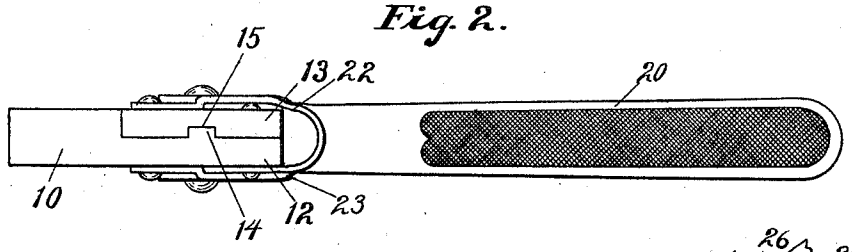


Fig. 3.

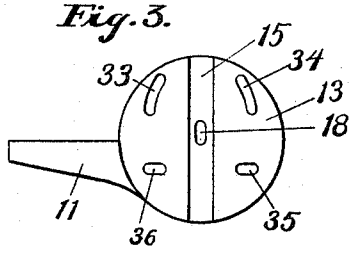


Fig. 4.

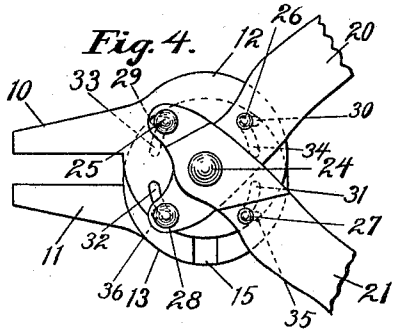
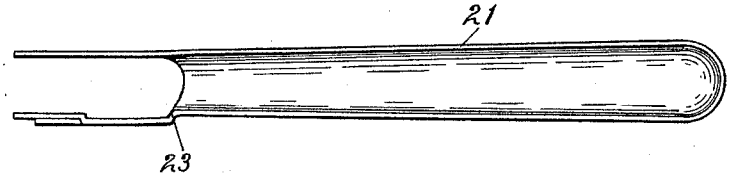


Fig. 5.



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UNITED STATES PATENT OFFICE.

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PARALLEL-JAW PLIERS.

1,038,745. Specification of Letters Patent. Patented Sept. 17, 1912.

Application filed January 17, 1912. Serial No. 671,770.

To all whom it may concern:

Be it known that I, ROBERT E. GREGG, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Parallel-Jaw Pliers, of which the following is a specification.

It is the object of my invention to provide a simple and effective arrangement of parallel-jaw pliers.

The various novel features of my invention will appear from the description and drawings, and will be particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a pair of pliers embodying my invention; Fig. 2 is a plan view of the pliers shown in Fig. 1; Fig. 3 shows one of the jaws; Fig. 4 is a fragmentary elevation showing the jaws in separated position; and Fig. 5 is a view of the lower handle member of Figs. 1 and 2.

The two jaw members 10 and 11 are slidably mounted one on the other, the motion being such that the jaws are always maintained in parallelism. The parallel motion sliding mechanism may take a number of forms, that shown being the one now preferred. In this preferred form the two jaw members are provided with substantially disk-shaped bases 12 and 13, the two bases being placed side by side and one of them being provided with a straight transverse tongue 14 fitting into a straight transverse groove 15 in the face of the other. The tongue 14 slides in the groove 15, maintaining the two jaws 10 and 11 always parallel.

The relative movement of the jaw members is obtained by two handle members 20 and 21, these two handle members preferably being arched in cross section to increase their strength as compared to their weight. The ends of the handle members adjacent the jaw members are preferably forked at 22 and 23, respectively, to straddle the bases 12 and 13, one prong of each fork preferably passing between the two prongs of the other fork. At their intersection the two handle members are pivoted together by a pin 24, which passes through transverse slots 18 in the bases 12 and 13. These slots permit the movement of the jaw members transversely in relation to the pin 24, but prevent any relative longitudinal movement between such pivot pin and the jaw members. Each handle member is also provided with a pin on each side of the pivot pin 24. These four pins 25, 26, 27, and 28 are preferably equidistant from the pivot pin 24, connect the two prongs of the forks of their respective handle members, and pass through slots 29, 30, 31, and 32 in the base 12 and through slots 33, 34, 35, and 36 in the base 13, respectively. The slots 29, 30, 35, and 36 are substantially at right angles to the slots 25, or extend longitudinally of the pliers, their width being such that the coöperating pins have an easy sliding fit with substantially no lost motion. The slots 31, 32, 33, and 34 are of such shape that they in no wise interfere with the free movement of the pins passing through them.

When the handle members 20 and 21 are moved relatively to each other, the pins 25, 26, 27, and 28 push against the sides of the slots 29, 30, 35, and 36, and cause the jaw members 10 and 11 to move toward or away from each other. These pins at the same time slide along these slots as the angle between the handle members 20 and 21 varies. The relative movement between the jaw members 10 and 11 is necessarily parallel on account of the tongue 14 and groove 15. Any tendency to bind is prevented by the balanced action of the various pins, for the two pins which act on each jaw member to move it, (or those which pass through the longitudinal slots in such members,) are carried by different handle members and are located on opposite sides of the slots 25, as well as on opposite sides of the tongue 14 and groove 15.

My invention is capable of considerable modification from the preferred embodiment illustrated, and I aim to cover all modifications which do not involve a departure from the spirit and scope of my invention as set forth in the following claims.

What I claim as new is:

1. In combination, a pair of jaw members mounted one on the other so that relative movement between the two is constrained to be a parallel movement, a pair of handle members pivoted together at a point fixed longitudinally relatively to said jaw members, and projections from said handle members engaging longitudinal slots in the jaw members.

2. In combination, a pair of jaw members slidably mounted the one on the other by a

parallel motion connection, a pair of intersecting forked handle members pivoted together at their intersecting point by a pivot which is fixed longitudinally relative to the jaw members, and a pin on each side of said pivot joining the two prongs of the fork of each handle member and passing through a longitudinal slot in one of said jaw members.

3. In combination, a pair of jaw members slidably mounted the one on the other by a parallel motion connection, a pair of intersecting forked handle members pivoted together at their intersecting point by a pivot which is fixed longitudinally relative to the jaw members, and a pin joining the two prongs of the fork of each handle member and passing through a longitudinal slot in one of said jaw members.

4. In combination, a pair of jaw members slidably mounted the one on the other by a parallel motion connection, a pair of intersecting forked handle members pivoted together at their intersecting point by a pivot which is fixed longitudinally relative to the jaw members, and a pin on each side of said pivot joining the two prongs of the fork of each handle member and passing through a longitudinal slot in one of said jaw members, and through an opening in the other jaw member, which opening does not interfere with the movement of such pin.

5. In combination, a pair of jaw members slidably mounted the one on the other by a parallel motion connection, a pair of intersecting forked handle members pivoted together at their intersecting point by a pivot which is fixed longitudinally relative to the jaw members, and a pin joining the two prongs of the fork of each handle member and passing through a longitudinal slot in one of said jaw members, and through an opening in the other jaw member, which opening does not interfere with the movement of such pin.

6. In combination, a pair of jaw members slidably mounted on each other with a parallel motion mounting, a pair of intersecting handle members pivoted together at their intersection by a pivot which engages a transverse slot in each jaw member, and a pin projecting from each handle member into a longitudinal slot in one of the jaw members.

7. In combination, a pair of jaw members slidably mounted on each other with a parallel motion mounting, a pair of intersecting handle members pivoted together at their intersection by a pivot which engages a transverse slot in each jaw member, and a pin projecting from each handle member on each side of said pivot into a longitudinal slot in one of the jaw members.

8. In combination, a pair of jaw members slidably mounted on each other with a parallel motion mounting, a pair of intersecting handle members pivoted together at their points of intersection by a pivot which is movable transversely to the jaw members but is prevented from longitudinal movement relatively thereto, and a projection from each handle member on each side of said pivot into an opening in one of the jaw members and movable longitudinally of the coöperating jaw member but immovable transversely thereof.

9. In combination, a pair of jaw members slidably mounted on each other with a parallel motion mounting, a pair of intersecting handle members pivoted together at their points of intersection by a pivot which is movable transversely to the jaw members but is prevented from longitudinal movement relatively thereto, and a projection from each handle member into an opening in one of the jaw members and movable longitudinally of the coöperating jaw member but immovable transversely thereof.

In witness whereof, I have hereunto set my hand and seal at Indianapolis, Indiana, this 13th day of January, A. D. one thousand nine hundred and twelve.

ROBERT E. GREGG. [L. S.]

Witnesses:
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G. B. SCHLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."