No. 651,082. Patented June 5, 1900.

F. C. McCLARY.

PLIERS.

(Application filed Nov. 22, 1897.)

(No Model.)

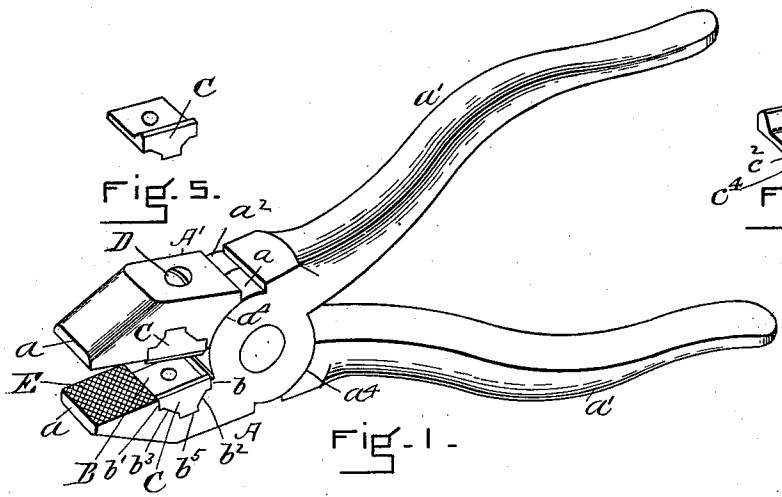


Fig. 1.

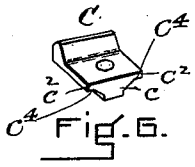


Fig. 6.

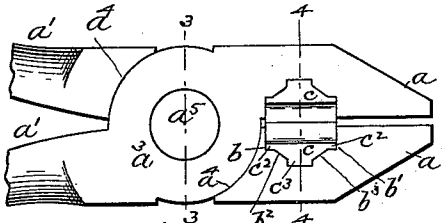


Fig. 2.

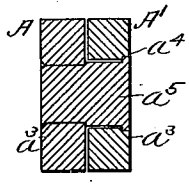


Fig. 3.

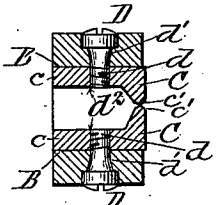


Fig. 4.

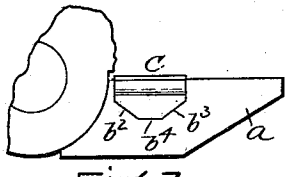


Fig. 7.

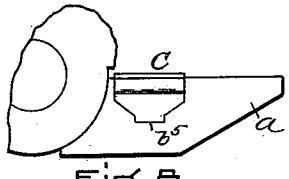


Fig. 8.

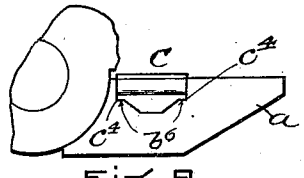


Fig. 9.

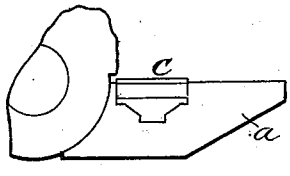


Fig. 10.

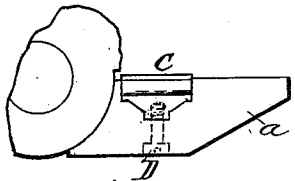


Fig. 11.

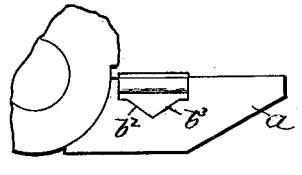


Fig. 12.

WITNESSES

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UNITED STATES PATENT OFFICE.

FREDERICK C. McCLARY, OF WHITESTOWN, NEW YORK, ASSIGNOR TO THE UTICA DROP FORGE AND TOOL COMPANY, OF UTICA, NEW YORK.

PLIERS.

SPECIFICATION forming part of Letters Patent No. 651,082, dated June 5, 1900.

Application filed November 22, 1897. Serial No. 659,367. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK C. McCLARY, a citizen of the United States, residing at Whitestown, in the county of Oneida and State of New York, have invented a new and useful Improvement in Pliers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to that class of pliers having removable side cutting-jaws; and the object of the invention is to provide pliers which shall be so constructed as to give a proper and sufficient support for the removable cutters, one that shall not increase the size of the pliers, shall be strong, shall locate the removable cutters close to the pivot or joint, and shall provide a wide opening in the throat close to the pivot.

Referring to the drawings, Figure 1 is a view in perspective of the pliers. Fig. 2 is a view, enlarged, in side elevation of the plier-jaws closed and of the side opposite that shown by the perspective. Fig. 3 is a view in cross-section upon the dotted lines 3 3 of Fig. 2. Fig. 4 is a view in cross-section upon the dotted line 4 4 of Fig. 2. Fig. 5 is a view in perspective of the removable cutter-jaw removed from the plier-jaw. Fig. 6 is a view in perspective of the same part looking at the end opposite the one shown in Fig. 5. Figs. 7 to 12, inclusive, show slight modifications of the shape of the removable side cutter-jaw recess in one of the plier-jaws and in the shape of the removable side cutter-jaw.

In the drawings I have represented the pliers as made of the two parts or sections A A'. Each part comprises a jaw a, a handle a', and a joint-section a^2, each joint-section having the enlarged cylindrical fulcrum a^3 and the cylindrical recess or bearing a^4, the recess or bearing a^4 of one part receiving the cylindrical fulcrum a^3 of the other and the two parts being united by the stud or rivet a^5, the smaller part of which is fast to the section A. There is formed in each of the jaws of the pliers close to the enlarged fulcrum a cross-recess B, which is shallow upon the end next the fulcrum and gradually increases in depth from said end to a point at or near the center of its width and from or near said center decreases in depth to its outer end.

I prefer that the recess have at its inner end the short vertical wall b and at its outer end the short vertical wall b', and that the bottom be formed by the inclined walls b^2 b^3, which may come together, as represented in Fig. 12, or shall be separated by a short straight flat section b^4, as represented in Fig. 7. In Fig. 8 I have represented this flat section as sunk to form a keyway b^5. In Fig. 9 I have represented between the inclined sections b^2 b^3 and the walls b b' narrow flat sections b^6, and in Fig. 10 I have represented the last-named formation as provided with the keyway.

The object of providing the pliers with the type of jaw described is to obtain a strong construction at the fulcrum, and also one that has an opening close to the fulcrum of a character or extent to permit the cutting-jaws to be placed as near the fulcrum as possible and still have a wide range of movement in relation to each other, whereby they may be opened sufficiently to receive wire or other material of relatively-large section, thus combining not only strength at the fulcrum and a large throat, but also the increased power arising from the location of the cutters close to the fulcrum, and the object in providing the jaws with cross-recesses of the shape specified is to preserve the strength of the jaws by not so removing the metal or shaping the jaws close to the fulcrum-point as to weaken them or produce angles at which the jaws will open upon the application of pressure or from which cracks or fractures may extend. This result is reached by bringing the inner edge of the recess close to the fulcrum-point and by making the surface of the jaw forming the bottom of the recess at that point gradually inclined away from the fulcrum, thereby preserving a sufficient thickness of metal from the fulcrum outward for the proper strength of the jaw at this point and without requiring that the jaw be increased in thickness or size. There is contained in each of these recesses B a removable cutter C. Each cutter has its inner surface c or its back side shaped to fit the jaw-recess B and is of a width to closely fit the same

and each has at one end a side cutting extension c'. The cutters, therefore, have relatively-shallow side walls c^2, and gradually increase in thickness to or near the center of their width, and where used with the form of recess represented in Fig. 2 they have a projecting section c^3, which forms a key of a shape and size to enter and fill the keyway of the jaw, and where the recess has between its inclined bottom and the side walls the flat ledges or sections b^6 the inner surface of the cutter has sections c^4, correspondingly shaped and adapted to bear upon the said sections b^6.

I prefer the construction of recess and cutter represented in Figs. 1, 2, 5, 6, 10, and 11, which combines the keyway and key and the straight narrow ledges or supports upon each side of the inclined surfaces upon the jaws and corresponding bearing-surfaces upon the cutters.

Each cutter is attached to the jaw by a screw D, having a threaded end d, which screws through a hole d' in the jaw and into the threaded hole d^2 in the cutter. (See Fig. 11.) The jaws have beyond the recesses B the usual nipping-faces E.

It will thus be seen that I have provided a construction of pliers which permits the use of removable cutting-jaws and gives them great range of opening and great power without unduly weakening the jaws or enlarging them in a manner to make it clumsy.

While I have described the recesses in the jaws as having surfaces which are inclined from the fulcrum or joint outward, I do not mean to be understood that such inclination is necessarily a straight one, as an inclination of a curved form may be employed. I would also say that while I prefer the construction or form of fulcrum for uniting the two parts of the pliers herein described, yet I do not wish to be understood as limiting the invention to pliers having such form of fulcrum, as the invention may be practiced with pliers having any other suitable form of fulcrum or pivotal connection.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In pliers of the character specified the sections A, A' each having a jaw a and a handle a' and combined by a fulcrum, recesses B extending across the jaws a close to the fulcrum, each recess having the inclined surfaces and a slot or keyway, and a removable cutter C for each jaw shaped upon its back to fit the recess therein and each having an integral key upon its said back to enter and fit the said keyway, and a screw to fasten the cutter in its recess to the jaw.

2. The pliers of the character specified having a fulcrum-joint, the jaws a, each jaw being provided with a cross-recess adjacent to the fulcrum, having narrow side walls and inclined intermediate surfaces between the side walls, and removable cutting-jaws contained in said recess, each cutting-jaw having the side walls and inclined back sides.

3. The pliers of the character specified having a fulcrum-joint, the jaws a, recesses extending across the jaws close to the fulcrum-point, each recess having shallow side walls, narrow ledges or supports adjacent to the side walls and inclined surfaces intermediate the ledges, and removable cutting-jaws contained in said recesses, each cutting-jaw having side walls, end rests and inclined back sides to seat in the jaw-recess, as and for the purposes set forth.

4. The pliers of the character specified having a fulcrum-joint a^3, the jaws a each jaw being provided with a cross-recess adjacent to the fulcrum, having narrow side walls, adjacent ledges or rests, inclined intermediate surfaces and a keyway between the inclined surfaces, and removable cutting-jaws contained in said recesses, each cutting-jaw having the side walls, the bearing ledges or rests, the inclined sections and a key and means for fastening the removable cutting-jaws to the main jaws, as and for the purposes described.

5. In pliers of the character specified, the combination of the sections A, A', each consisting of a jaw a, a handle a' and a part of a fulcrum comprising the cylindrical section a^3 and the cylindrical recess or bearing a^4, a pivot or stud uniting the two parts, each jaw being provided with a recess B extending across it close to the fulcrum and having inclined surfaces, and a removable side cutter C for each jaw, the inner face of which is inclined in whole or in part to fit the inclined sections of said recess, and means for fastening the side cutters to the jaws.

6. The removable side cutting-jaws herein described, the same comprising a block or removable part having side walls c^2, bearing ledges or rests c^4, the key c^3, an inclined bottom between the ledges or rests c^4 and the key and a side cutting extension c', as and for the purposes set forth.

7. The removable side cutting-jaw having the side walls c^2, the key c^3 and inclined bottom between the walls and the key and the cutting extension c'.

FREDERICK C. McCLARY.

In presence of—
W. PIEREPONT WHITE,
CARRIE EASTLAKE.