

May 12, 1959

A. BAUER
PLIER TOOL

2,885,781

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2 Sheets-Sheet 1

Fig. 1.

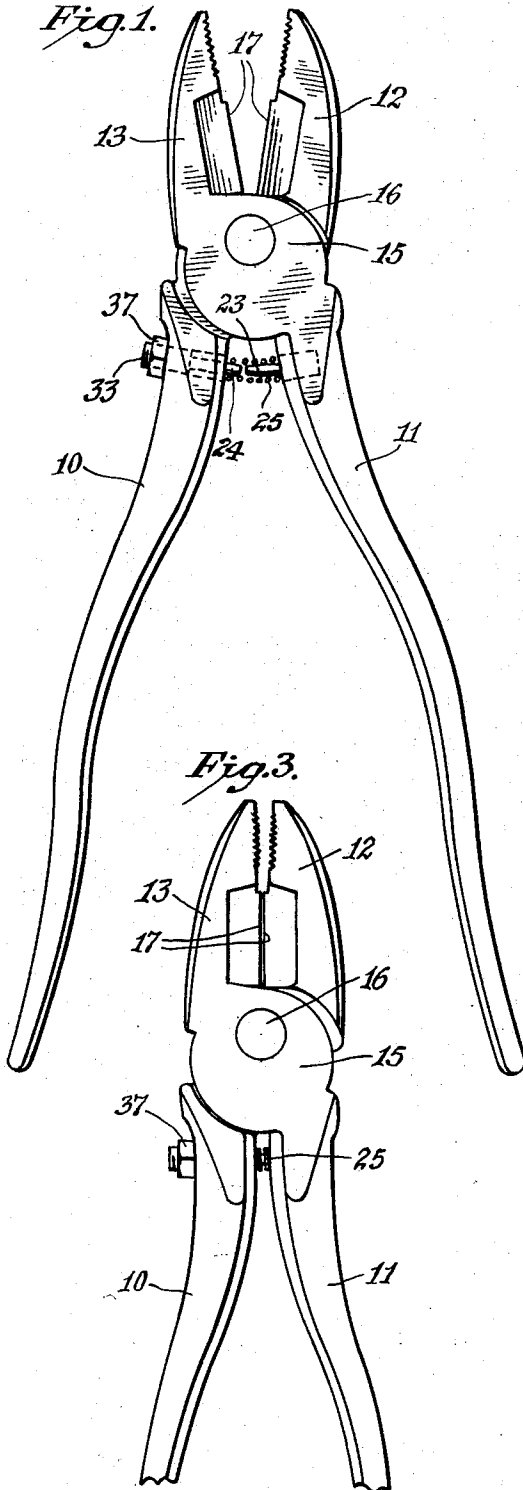


Fig. 2.

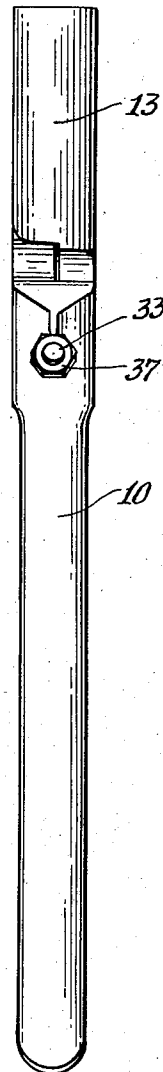
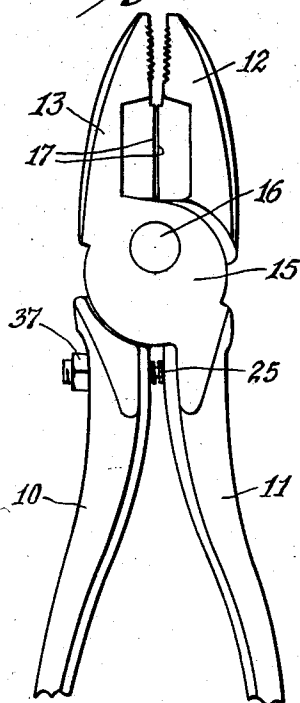


Fig. 3.



INVENTOR.
ALBERT BAUER

BY

Kenny & Kenny
ATTORNEYS.

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Fig. 4.

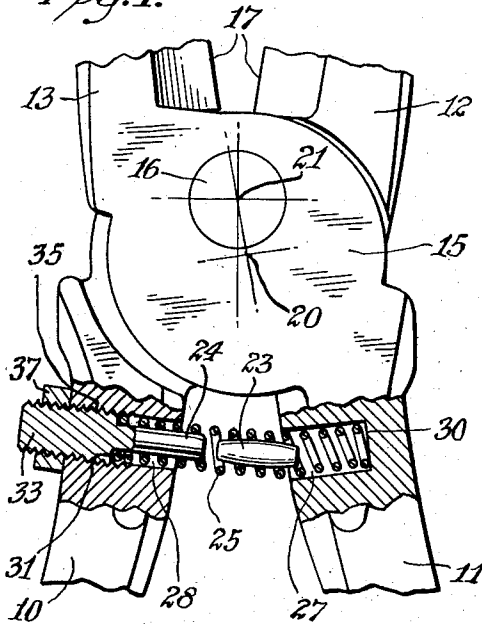


Fig. 5.

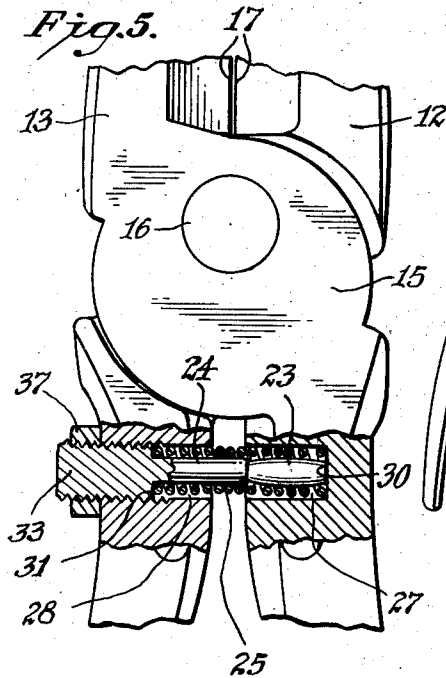
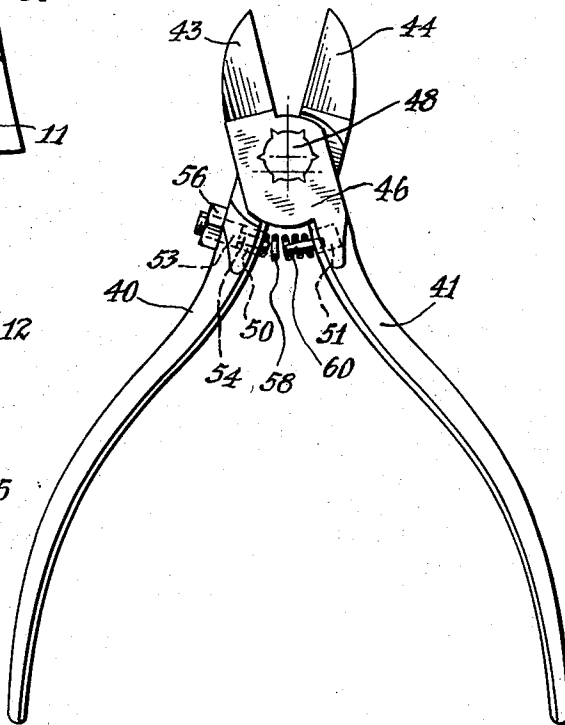


Fig. 6.



INVENTOR.
ALBERT BAUER

BY

Kenyon & Kenyon
ATTORNEYS.

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2,885,781

PLIER TOOL

Albert Bauer, Whitesboro, N.Y., assignor, by mesne assignments, to Kelsey-Hayes Company, Detroit, Mich., a corporation of Delaware

Application June 11, 1956, Serial No. 590,773

2 Claims. (Cl. 30—271)

This invention relates to a pivoted hand tool, and more specifically, it relates to a plier containing an off-center pivot which is especially adapted for heavy duty.

This application is a continuation-in-part of copending application Serial No. 486,178, filed February 4, 1955.

Pliers containing the rivet or pivotal connection off-center in the direction of the cutting area or jaws are capable of heavy duty by reason of added leverage. It is noted in the case of cutting pliers, that damage is done to the cutting edges because they are forcibly brought together as the material being cut is ruptured. Consequently, there is need for preventing such damage from occurring.

Therefore, it is an object of this invention to provide a pivoted hand tool containing an offset center or rivet which is especially useful for heavy duty.

Another object of this invention is to provide cutter pliers containing an offset rivet and a variable adjustment which permits the pliers to be used without contact of the cutting edges with each other and thus without risk of damage to the cutting edges in heavy duty work.

Other objects and advantages of this invention will be better understood by reference to the accompanying drawings which form a part of this specification, and wherein:

Figure 1 is a plan view of an illustrative cutter plier of this invention with the jaws in open position;

Figure 2 is a side view of the plier in Figure 1;

Figure 3 is a plan view of the plier of Figure 1 having the jaws in the closed position;

Figure 4 is a fragmentary view partly in cross-section of the pliers in Figure 1;

Figure 5 is a fragmentary view partly in cross-section of the pliers in Figure 4 and showing the jaws in closed position; and

Figure 6 is a plan view of another illustrative embodiment of this invention.

In the drawings, as illustrated in Figures 1-5, inclusive, the pliers are of the cross-handled variety containing handles 10 and 11 associated with jaws 12 and 13, respectively. The jaws and the handles of the pliers are connected to pivot areas having plane contact areas, this being illustrated in the drawings by handle 11 and jaw 13 being connected to pivot area 15. Similarly, handle 10 and jaw 12 are connected to a like pivot area which lies below pivot area 15 (not shown in the drawing). In conventional pliers, the pivot areas would be connected by means of a rivet or other suitable means at the centers thereof. In this invention the pivot areas are connected by means of a rivet 16 in a position which is offset from the center of the pivot areas in the direction of the cutter edges 17. By placing the rivet or pivot point as close as possible to the cutting edges 17, it is possible to obtain added leverage which makes this plier especially suited for heavy duty cutting. The amount of displacement can be about $\frac{1}{3}$ to $\frac{2}{3}$ of the distance between the center and the cutting edges.

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The amount of offset in the rivet of the pliers shown in Figure 1 is illustrated in Figure 4. In Figure 4 the center of pivot area 15 is located at point 20. The center of rivet 16 is located at point 21. The distance between the center of pivot area 15 and the center of rivet 16 is the added leverage which is obtained in the use of the illustrative pliers. If desired, rivet 16 can be offset to the left or right of center 20. The horizontal displacement of the center of the rivet from the center of the pivot head provides for greater movement of one handle of the plier relative to the other. For some purposes, it is advantageous that one handle is capable of being manipulated with ease to provide desired cutting action.

The distance separating jaws 12 and 13 in a closed position is regulated by means of stop pins 23 and 24. The jaws are normally biased apart by a spring 25 whose ends are supported in recesses 27 and 28 located in handles 11 and 10, respectively. Stop pins 23 and 24 are small enough in diameter to fit within the helical spring 25. One end of spring 25 abuts against shoulder 30 of recess 27, whereas the other end abuts against an annular shoulder 31 which is located at the juncture of stop pin 24 and its threaded section 33. A portion 35 of recess 28 is threaded for engagement with threaded section 33. Stop pin 24 and threaded section 33 are integrally formed to provide for adjustment in the position of the stop pin. A hold nut 37 engages threaded section 33 and serves to fix position thereof. By this construction, stop pin 24 can be moved in and out of recess 28 in order to provide for a greater or lesser clearance between jaws 12 and 13 when they are in closed position. Figure 5 illustrates the clearance between the cutting edges of jaws 12 and 13 in a closed position by virtue of stop pins 23 and 24.

It is advantageous to have the stopping action of the pliers consist of two pins as in the present invention. In this way, there is little interference with the stopping action because the length of free pin 23 lends to easy action within spring 25, even when long distances separate handles 10 and 11. In the case of a single pin, great care would be required in the design of the pin to provide for easy and effective performance. Free pin 23 is formed so that it can slide easily along coiled spring 25 without being caught by its convolutions. To this end it is shown barrel shaped with curved tapered ends. It is made of such length that in coaction with the fixed stop pin, it will hold the cutting edges properly spaced when the jaws are closed.

Figure 6 contains an illustration of a plier for lighter cutting duty. The principle of operation is the same as the pliers shown in Figures 1-5, inclusive. In this plier, handles 40 and 41 contain jaws 43 and 44, respectively. Jaw 43 and handle 41 are connected by means of pivot area 46 and the pivot areas of the plier are joined by means of an offset rivet 48. Recesses 50 and 51 are contained in handles 40 and 41, respectively. Recess 50 contains at one end a threaded section 53 which is integral with stop pin 54. The threaded section contains an end protruding from the side of handle 40 which is in engagement with a nut 56. A spring 58 bridges handles 40 and 41 by having its ends positioned within recesses 50 and 51. An unattached stop pin 60 is also positioned within spring 58.

Having thus provided a written description of this invention, it should be understood that no undue limitations or restrictions are to be imposed by reason thereof, but that the present invention is defined by the appended claims.

I claim:

1. In a cutting plier of the nipper type having first

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and second pivoted levers with first and second opposed abutable cutting edges, and having first and second rigid handle members relatively closable along a plane, the improvement of a stop construction to accurately determine the maximum relative closing position of the said cutting edges, comprising, wall surfaces defining a first bore in said first handle, wall surfaces defining a second bore in said second handle, said first and second bores each having an opening to their respective handle surfaces, said bore openings facing one another, said first and second bores each having a longitudinal axis lying on said plane of handle closing, a coiled wire guide carried between said handles, said guide having a first end residing in said first bore, a second end residing in said second bore, a plug threadably carried in said first bore for axial adjustment, and a slug freely slidable in said coiled guide, said slug having a fixed length, and said plug adjustable to a contact position with said slug to present a block combination preventing full closing of said first and second handle.

2. In a cutting plier of the nipper type having first and second pivoted levers with first and second opposed abutable cutting edges, and having first and second rigid

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handle members relatively closable along a plane, the improvement of a stop construction to accurately determine the maximum relative closing position of the said cutting edges, comprising opposed first and second recess openings in the said first and second handles, respectively, a coiled wire guide having a first end mounted in said first recess, a second end mounted in said second recess, said coiled guide extending along said plane of handle closing, a slug freely slidable within said guide, and a stop member carried in one of said recesses within said guide, said stop member adjustable to a contact position with said slug to present a block combination preventing full closing of said first and second handle.

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