June 2, 1925. 1,540,464

C. S. EDWARDS

PLIERS

Original Filed March 17, 1923

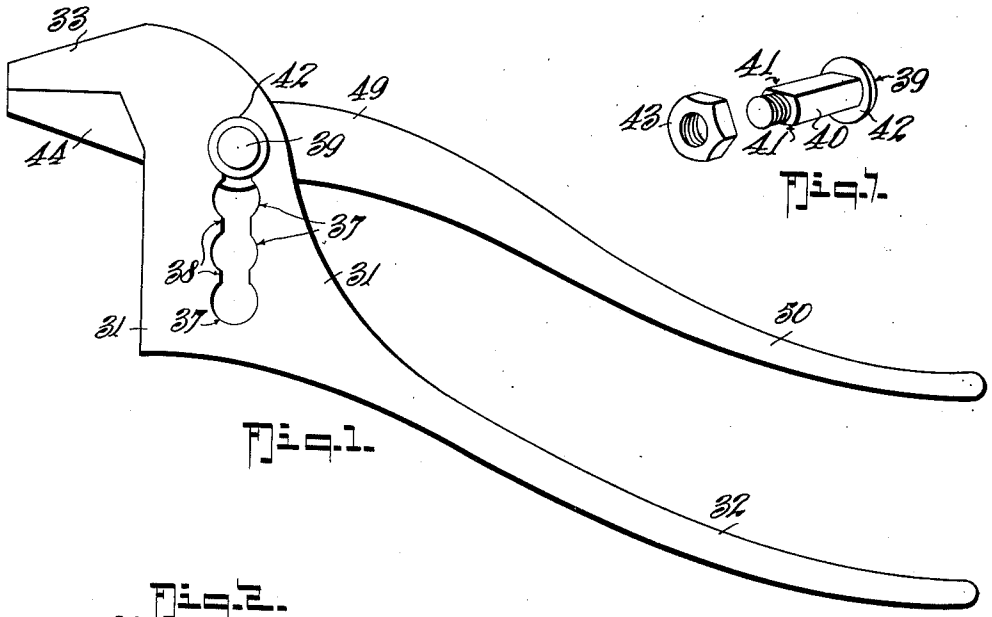


Fig. 1.

Fig. 7.

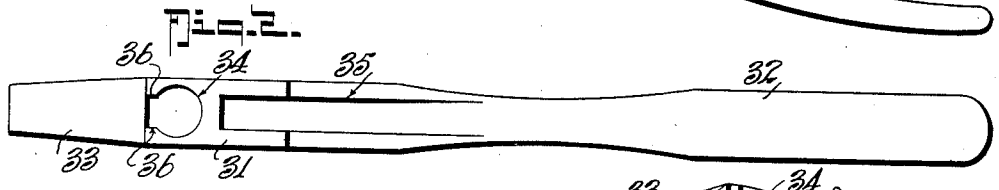


Fig. 2.

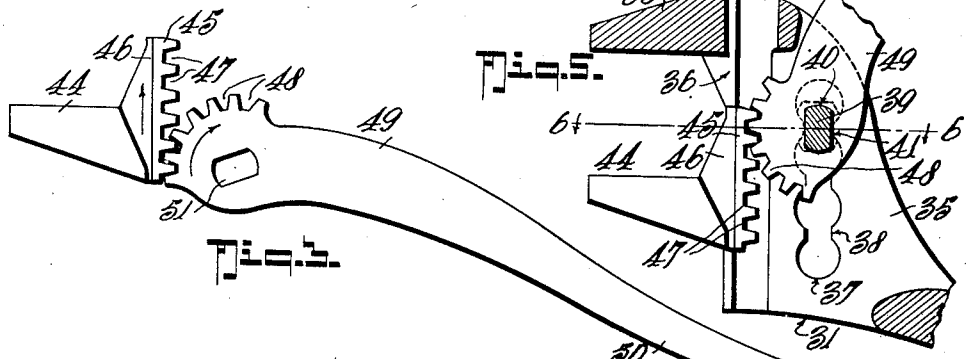


Fig. 3.

Fig. 5.

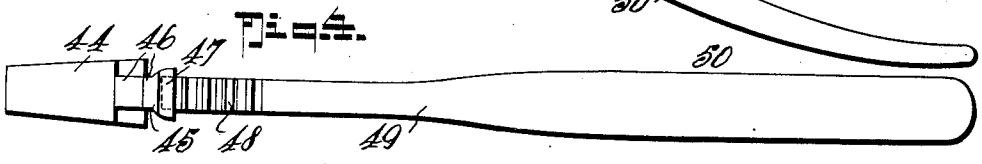


Fig. 4.

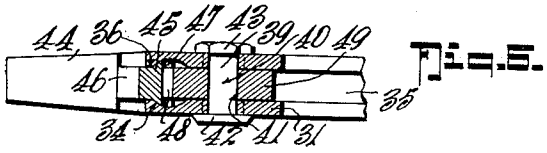


Fig. 6.

INVENTOR
Charles S. Edwards.
BY
Albert G. Dieterich
ATTORNEYS

Patented June 2, 1925. 1,540,464

UNITED STATES PATENT OFFICE.

CHARLES S. EDWARDS, OF PRINEVILLE, OREGON.

PLIERS.

Original application filed March 17, 1923, Serial No. 625,793. Divided and this application filed February 29, 1924. Serial No. 696,054.

To all whom it may concern:

Be it known that I, CHARLES S. EDWARDS, a citizen of the United States, residing at Prineville, in the county of Crook and State of Oregon, have invented certain new and useful Improvements in Pliers, of which the following is a specification.

This invention resides in the provision of an improved form of pliers of that particular type wherein is embodied means for adjusting the radius of action of the cooperating jaw members and for moving the said jaws toward or from each other in parallel relation.

The invention has for its object to provide an improved construction of pliers of the general type stated in which the parts are especially designed, in a simple and compact manner, for exerting a great leverage power upon the cooperating jaws for permitting quick and simple adjustment of the parts to provide for effectively increasing or diminishing the degree of action of the cooperative jaws thereof, to adapt them for special kinds of work, as conditions may require, and for permitting the ready disassembly, substitution of broken or worn parts, and reassembly of said parts as may be desired.

With the above and other objects in view that will hereinafter appear, my invention embodies those novel features of construction, combination and arrangement of parts, all of which will be first fully described in the following description, then be specifically pointed out in the appended claims, and illustrated in the accompanying drawing, in which:—

Figure 1 is a side elevation of a modified form of pliers.

Figure 2 is a plan view of the main body portion of the said modified form of pliers.

Figure 3 is a detail side elevation of the modified form of movable jaw and the arm cooperative therewith and being shown in cooperative relation.

Figure 4 is a detail plan view of the parts shown in Figure 3.

Figure 5 is a central longitudinal section through the head portion of the modified form of pliers, and illustrates the parts as positioned for permitting an adjustment of the jaws thereof.

Figure 6 is a detail horizontal section taken on the line 6—6 on Figure 5.

Figure 7 is a detail perspective view of the modified form of fulcrum member.

In the drawing, in which like numerals of reference indicate like parts in all of the figures, it will be seen that I provide a main or body portion 31 having an extended handle portion 32 and a stationary jaw portion 33. The main body portion 31 is provided at 34 with a vertical bearing forming bore and the said body portion is cut out as at 35 to provide proper bearing for the movable jaw actuating lever, hereinafter referred to. The cut out portion 35 merges with the vertical bore 34 and passes through the said bore to provide a vertical guideway 36 and each of the opposite cheek portions of the main body portion 31, formed by reason of the cut out portion 35, is provided with a vertical slotway composed of a plurality of circular portions 37 all of which are in communication through the medium of the straight slot portions 38, see Figures 2 and 5.

A fulcrum pin 39 is provided having curved side portions 40 adapted to cooperate with the circular portions 37 of the vertical slotways hereinbefore described, and flat side portions 41 adapted to cooperate with the straight portions 38 of the vertical slotways in a manner hereinafter described. The fulcrum pin 39 is also provided with an enlarged head 42 and with a reduced and threaded portion for accommodating a flat retaining nut 43, see Figure 7.

A movable jaw 44 is provided to cooperate with the stationary jaw 33 formed integral with the main body portion 31 and the said movable jaw 44 is provided rearwardly thereof with an approximately semi-circular bearing portion 45 adapted to have a vertical bearing relation with the vertical bore 34 and the portions 44 and 45 of the said movable jaw are joined by a reduced web 46 adapted to be guided in the vertical guideway 36. The portion 45 of the movable jaw member 44 has the rear face thereof provided with a rack portion 47 adapted to be engaged, for moving the same, by the toothed segments 48 formed on the flattened portion 49 of the jaw actuating lever 50. The portion 49 of the lever 50 is provided with a cross aperture 51 corresponding in shape to the cross sectional area of the fulcrum pin 39 hereinbefore mentioned.

When the parts are assembled as illus-

trated in Figures 1 and 5 with the movable jaw guided in the vertical bore 34 and guideway 36 and the lever portion 49 of the movable jaw actuating lever 50 in cooperative relation with the cut out portion 35 and with the fulcrum pin 39 projected through the respective vertical slot portion 37 and the aperture 51 in the said lever and the parts all adjustably secured to such position by the relatively flat nut 43, it will be readily understood that, by oscillation of the lever 50 the cooperating jaws 33 and 44 may move towards each other or apart, in parallel relation, for effecting the desired gripping of the object. By reference to said Figure 15, it will be readily apparent that by oscillating the lever 50 to the position shown in that figure so that the flat portions 41 of the fulcrum pin 39 come into register with the straight portions 38 of the vertical slotway, the said actuating lever 50 and the movable jaw 44 may be moved along the vertical slotway to effect the desired adjustment as to capacity of the jaws which is desired.

By reason of forming the parts as shown and described, great leverage is exerted upon the movable jaw member and the said jaw members are moved and guided in a manner for effecting parallel relation of the said jaw and its cooperative stationary jaw at all times and under all adjustments.

My present invention is a division of my application filed March 17, 1923, Serial No. 625,793 which has resulted in Patent No. 1,308,510, granted September 26, 1924.

From the foregoing description, taken in connection with the accompanying drawing, it is thought the complete construction, operation and advantages of my invention will be readily apparent to those skilled in the art to which it appertains.

What I claim is:—

1. In a device of the class described, comprising the following elements in combination; a relatively stationary body having a handle portion, a stationary jaw, a vertical guide bore, cut out portions merging with and passing through the guide bore, and slotways forming adjustable fulcrum supports; a movable jaw guided by the guide bore; an actuating lever; a lever fulcrum pin having parallelly flattened sides; and a plurality of cooperative communicating bearing portions for supporting the fulcrum pin in varied adjustments.

2. As a new article of manufacture of the class described, a pliers comprising a relatively stationary body having a handle portion, a stationary jaw, a vertical guide bore, cut out portions merging with the guide bore to form a lever guideway and extending through the guide bore to form a jaw guideway, and vertical slotways comprising a plurality of circular portions joined by straight portions; a movable jaw guided in the vertical bore and jaw guideway; a lever for moving said jaw, a fulcrum pin passing through said lever, having circular portions cooperating with the like portions of the vertical slotways to form bearings and flat portions for cooperating with the like portions of the vertical slotways to permit adjustment of the fulcrum pin along the said slotway.

3. In pliers of the class described, a relatively stationary body having a handle portion, a stationary jaw portion, cut out portions for forming guideways, and slotways for forming adjustable fulcrum supports; a movable jaw having a rack portion; a lever having a toothed segment for meshing with the rack of the movable jaw to move the same, and means for adjustably pivoting said lever for varying the working capacity of the fixed and movable jaws.

4. In pliers, a body having a handle and having a fixed jaw and a passage, a sliding jaw carried by said body and projecting into said passage, a second handle projected into said passage, a shiftable fulcrum for said second handle, and a rack and gear sector connection between said second handle and said sliding jaw.

CHARLES S. EDWARDS.