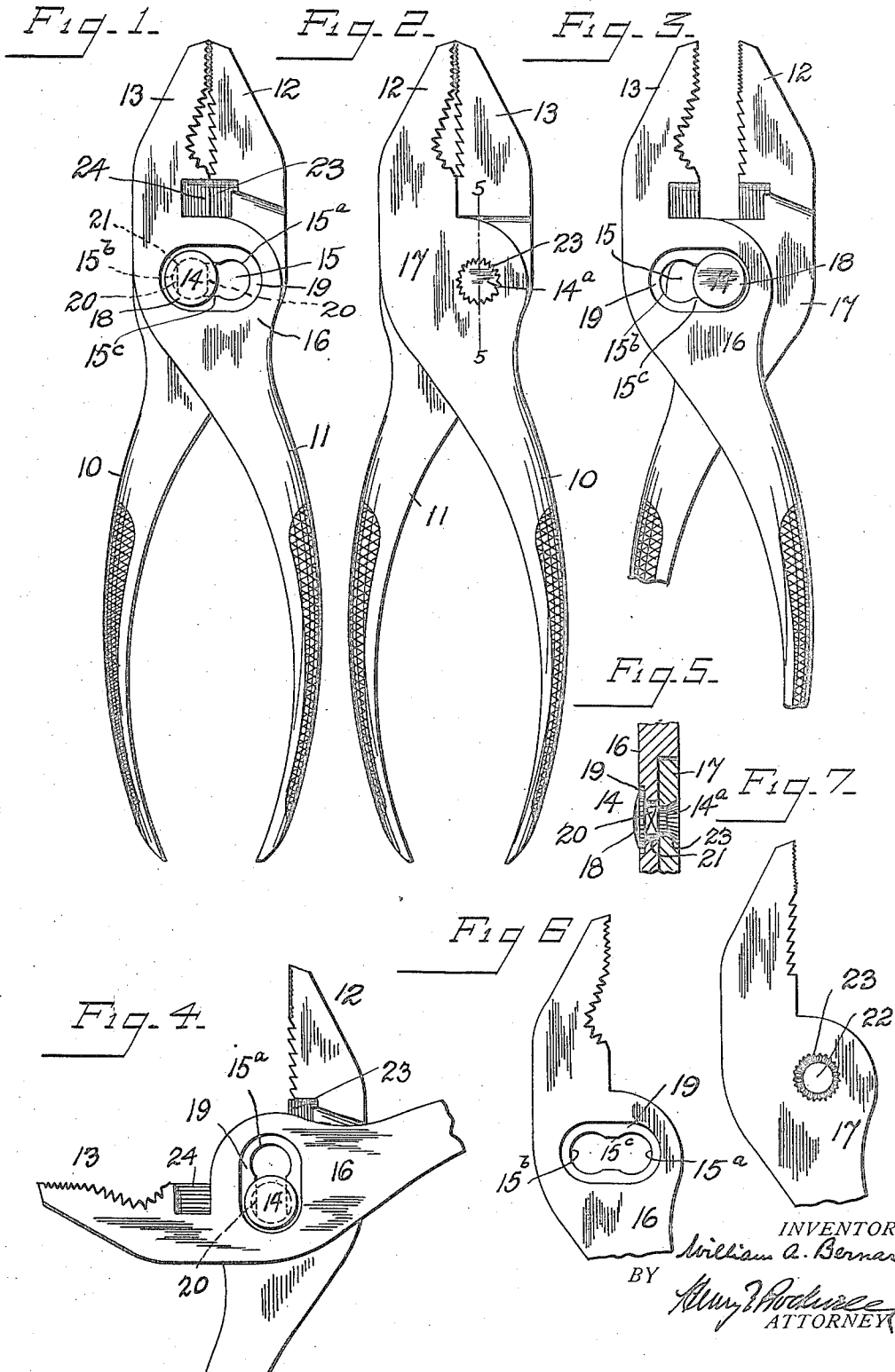


W. A. BERNARD.
 HAND TOOL.
 APPLICATION FILED APR. 30, 1917.

1,236,138.

Patented Aug. 7, 1917.



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HAND-TOOL.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM A. BERNARD, of the city and county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Hand-Tools, of which the following is a full, clear, and exact description.

This invention relates to hand tools and it pertains more especially to tools of the lever handle type such as pliers, in which there is a so-called slip joint between the two lever members, by means of which the bite of the jaws may be adjusted. In one adjustment the jaws will usually move into engagement with each other, while in the other adjustment which is permitted, the jaws are somewhat separated when their movement toward each other comes to an end. In order to change the adjustment, it is merely necessary to open the tool by swinging the levers on their axis, and when the tool is so opened one lever can be shifted transversely relatively to the pivot member, after which the jaws are again closed.

This general type of tool is well known, but heretofore it has usually been considered necessary to make the jaws quite thick, and the pivot bolt or pin has usually extended laterally from both faces of the tool. The consequence of such an arrangement is that the jaw portion of the tool is very bulky and, if the available space is small, it is difficult or impossible to get at the work with such an implement.

One of the primary objects of the present invention is to furnish a hand tool of the slip joint type in which the jaw portion of the tool can be made very thin, without objectionable projections, and more particularly in which the pivot pin does not project laterally from either face of the implement.

Another object of the invention is to provide a tool of this type in which a pivot bolt which lies substantially flush with both faces of the tool is very securely held in place so that the lever members will always be held together in their proper relative positions.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawing,

Figure 1 is a face view of a pair of slip-joint pliers, embodying my improvements, showing the jaws closed together.

Fig. 2, is a view similar to Fig. 1, looking from the opposite face of the tool.

Fig. 3, is a fragmentary view similar to Fig. 1 showing the adjustment of the jaws for operating on larger work.

Fig. 4, is a fragmentary view showing the jaws opened to the maximum for changing the adjustment.

Fig. 5, is a section on line 5—5 of Fig. 2, and

Figs. 6 and 7 are fragmentary details of the respective lever members.

In the form shown, the lever handles 10, 11, are provided with plier jaws 12, 13, respectively. The two lever members of the tool cross each other in the usual manner and are pivoted together by means of a pivot pin 14. This pivot pin 14 passes through a transverse slot 15 in a lateral enlargement 16 intermediate of the jaw 13 and handle 11, and the other lever member is provided with a similar lateral enlargement 17 in which one end of the pivot pin 14 is secured. The slot 15 has enlarged curved end portions 15^a, 15^b, connected by a restricted portion 15^c. The pin 14 has a head 18 overlying the edges of the slot 15. This head 18 is received in a countersink or rabbet 19 around the edge of the slot so that the head lies substantially flush with the side face of the tool as shown in Fig. 5. Immediately beneath the head the shank of the pin 14 is provided with a portion which is partly flat and partly round. This portion has flattened sides 20 spaced apart at a distance almost but not quite equal to the width of the restricted portion 15^c of the slot. The portion of the shank beneath the head also has curved surfaces 21 adapted to fit snugly against the curved surfaces provided by the end portions 15^a, 15^b of the slot. The other end of the pivot pin 14 is nonrotatively interlocked with the enlarged portion 17 of the other lever member by being riveted therein. In the form shown this other lever member is provided with a round hole 22 to receive the end portion of the pivot pin and the hole 22 is provided at the outer face of said member with a conical countersink 23 that is radially fluted as shown in Fig. 7. The end of the pivot pin is clenched in this countersink, as shown at 14^a, so that the metal in the end of the pin is pressed into the flutes of the countersink. In this manner a very effective riveted connection is made between the pivot pin and

one of the lever members which absolutely prevents any turning movement of said pin relatively to said member and holds the parts of the tool in assembled relation in a strong and reliable way.

It will be observed that the flattened sides 20 of the pivot pin are approximately parallel to the longitudinal axis of the tool. Consequently when the lever members are in the position shown in Fig. 1, the round portions of the shank are engaged in one end of the slot. When it is desired to change the adjustment, the jaws are swung open, as shown in Fig. 4 until the narrow intermediate part of the slot is in line with the flattened part of the shank, whereupon the members 11, 13, may be shifted transversely on the pin until the latter engages in the other end of the slot. The pin is locked in the other end of the slot, as shown in Fig. 3, by a slight turning movement of the jaws toward each other, as will be understood.

In the particular form shown, the jaws are provided closely in advance of the pivot with cutting edges, 23, 24, extending longitudinally of the tool at one face thereof. These cutting edges provide what is known as a side cutter. This side cutter may be brought very close to the work owing to the fact that the head of the pivot pin does not project laterally beyond the face of the tool. In advance of the side cutter the jaws have the form usual in pliers with suitable transverse serrations on the working faces.

Without limiting myself to the precise construction shown, I claim,

1. In a hand tool, the combination of a pair of crossed lever members having laterally enlarged flattened portions facing each other intermediate of the ends of the tool, one of said laterally enlarged portions being provided with a hole and the other with a transverse slot having enlarged ends adapted to register with said hole, the member having said slot being provided with a rabbet around the edge of the latter at the outer face of said member, and a pivot pin with

a flattened shank passing through said slot for pivoting the lever members together, said pin having a head lying in said rabbet at one face of the tool whereby said pin is substantially flush with that face of the tool, and the other end of said pin being riveted in said hole substantially flush with the opposite face of the tool.

2. In a hand tool, the combination of a pair of crossed lever members having laterally enlarged flattened portions facing each other intermediate of the ends of the tool, one of said laterally enlarged portions being provided with a hole and the other with a transverse slot having enlarged ends, said hole being countersunk at one face of the tool and provided with flutes, and a headed pivot pin with a flattened shank passing through said slot for pivoting the lever members together, said shank being riveted in the countersunk portion of said hole against said flutes so that it is effectively prevented from turning.

3. A hand tool having the elements specified in claim 1, wherein the hole for the pivot pin in the first mentioned flattened portion is provided with a conical countersink having radial flutes, and wherein the pivot pin is clenched in said countersink against said flutes.

4. In a hand tool, the combination of a pair of crossed lever members, one of which is provided with a transverse slot having enlarged ends, said member being provided with a continuous rabbet around the edge of the slot at one face of the tool, a pivot pin with a flattened shank passing through said slot for pivoting the lever members together and having a head overlying the sides of said slot and located in said rabbet substantially flush with the adjacent face of the tool, and means for securing the shank of said pivot pin rigidly to the other lever member.

In witness whereof, I have hereunto set my hand on the 28th day of April, 1917.

WILLIAM A. BERNARD.