Nov. 1, 1927. 1,647,878

J. E. McWILLIAMS

PLIERS

Original Filed Jan. 21, 1924

Fig. 1

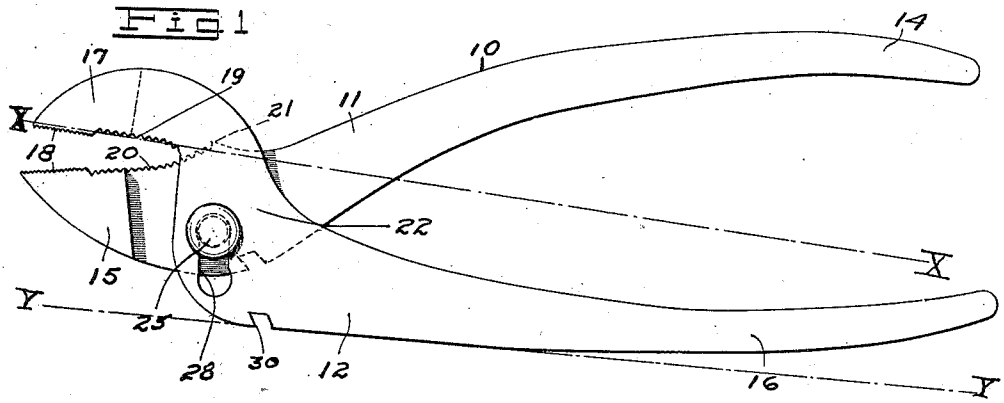


Fig. 3

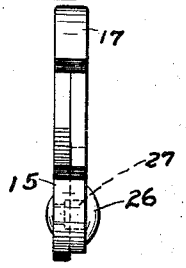


Fig. 2

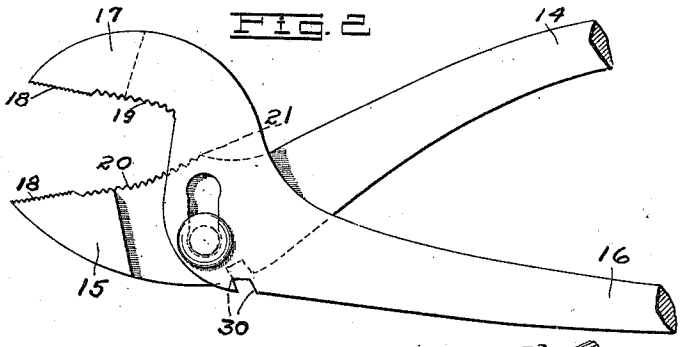


Fig. 4



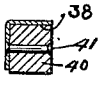


Fig. 6



Fig. 7

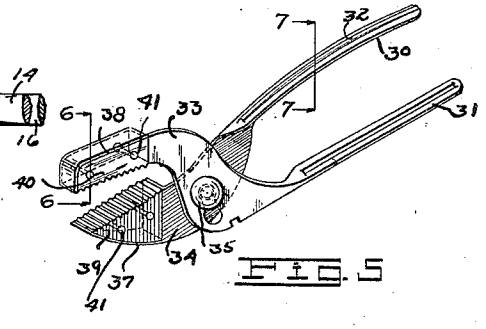


Fig. 5

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PLIERS.

Application filed January 21, 1924, Serial No. 687,451. Renewed September 2, 1927.

This invention relates to pliers.

The general object of the invention is to provide an improved form of pliers which enables the user to firmly hold an article being manipulated.

One of the specific objects of the invention is to provide a pair of pliers wherein the arms of the pliers are of dissimilar shape whereby greater grasping efficiency may be obtained.

Another object of the invention is to provide a pair of pliers having a handle portion of one arm substantially straight and having the gripping portion of this arm in a plane substantially parallel to the plane of the handle.

A further object of the invention is to provide a pair of pliers of the slip-joint type wherein the gripping portion is offset to one side of the plane passing through the axis of the pivot and bisecting the angle formed by the handle portions of the arms.

Other objects of the invention will be apparent from the following description taken in connection with the accompanying drawings wherein Fig. 1 is a top plan view of a pair of pliers embodying the features of my invention; Fig. 2 is a fragmentary view showing the pliers with their jaws extended; Fig. 3 is a front elevation looking toward the jaws; Fig. 4 is a side elevational view of the pliers; Fig. 5 is a perspective view of a modification embodying the features of my invention; Fig. 6 is a section on line 6—6, Fig. 5; and Fig. 7 is a section on line 7—7, Fig. 5.

Referring to the drawing by reference characters I have shown a pair of pliers embodying the features of my invention at 10. The pliers constitute two arms 11 and 12. The arm 11 includes a handle portion 14 and a jaw portion 15 while the member 12 constitutes a handle portion 16 and a jaw portion 17. The jaw portions 16 and 17 are provided with serrations 18 adjacent the outer end to facilitate gripping. The portion 17 is provided with another set of serrations 19 while the portion 15 is provided with serrations 20 which extend to a point 21 adjacent the handle portion 11.

The member 11 of the pliers comprises preferably a single piece of metal worked to the shape shown in the drawing and which is quite similar to the members used in the common type of pliers now on the market.

The portion 12 which includes the handle portion 16 is preferably integrally connected with the jaw 17 by a portion 22 which is offset from one side of the member 16. The arrangement of the serrations 19 to the handle 16 is such that if a plane X—X is passed through the top of the serrations 19, and another plane Y—Y is passed through the axis of the handle member 16, these planes will make a very acute angle with each other. In fact, the relation of the serrations 19 and the handle 16 is such that it might be said the parts are substantially parallel.

The pliers are preferably of the slip-joint type. The joint between the two portions is provided by means of a fastening member 25 which is fixedly secured to the portion 11 and is provided with a head 26 and with a shank 27 which moves in a slot 28 in the portion 12 of the pliers. The shank is provided with a flat portion thus enabling the two parts to be moved one with respect to the other. Pliers of the slip-joint type are old and well-known and a further description of this joint is believed unnecessary.

In Fig. 2 the relation of the parts when the pliers are arranged for gripping a large object is shown. The pliers are provided with alining notches 30 which serve as wire cutters.

The construction of the pliers is such that is use an operator needs merely to place them upon the object to be operated upon and then by holding the arm 16 and by pulling upon the arm 14 the object being operated upon will both be gripped and rotated. The arrangement of the fulcrum 25 is such that the pliers produce a very strong gripping effect.

In the common pliers now in universal use a plane passing through the meeting face of the pliers and intersecting the axis of the pivot falls between the handle members. With my construction the gripping members are offset laterally from one side of the fulcrum 25 to produce an effective gripping action.

The flat handle 16 permits the use of my pliers when working close to a wall or the face of machinery and in other places where the common pliers cannot be used.

In Fig. 5 I show a modification of my invention wherein the parts are of stamped metal. The two portions of the pliers 30 and 31 include handle portions having

strengthening ribs 32 and body portions 33 and 34. The two parts 33 and 34 may be provided with the slip-joint 35 as previously described.

In order to provide hardened jaw pliers when the stamped metal modification is employed, I provide the jaws of the pliers with pockets or recesses 37 and 38 which are stamped or drawn from the portions 33 and 34. In the recesses I secure hardened steel jaws 39 and 40. These hardened steel jaws may be secured to the body by suitable rivets 41.

It will be noted that according to my invention each handle or lever has a gripping face and that the opposed gripping faces are capable of assuming parallel relation to each other. In my device the pin 25 is located in an off-set position with relation to both jaws so that the planes of both gripping faces lie on the same side as the body of the pin. The slot 28 enables the pivot pin 25 to be positioned at a plurality of different points so that adjustability of the jaws may be effected.

The pliers embodying the features of my invention can be economically manufactured. Owing to the offset jaws my pliers provide a turn of greater angle when some object interferes with the action of the handles than is possible with ordinary pliers.

Having thus described my invention, I claim:

1. A pair of pliers, comprising a pair of levers one of which is formed with a jaw and provided with a fulcrum-pin, the other lever formed with an off-set portion having a slot to receive said pin for adjustment of the fulcrum-pin and having a jaw formed with a gripping face disposed opposite to the gripping face of the other jaw, the gripping faces of the jaws lying in a plane to one and the same side of the axis of the fulcrum-pin and substantially parallel to the longitudinal axis of the levers.

2. In a pair of pliers, the combination of a pair of levers having jaws with opposed gripping faces capable of assuming a parallel relation to each other, one of said levers having a fulcrum-pin, and the other lever having a slot receiving the pin and extending in a direction substantially transverse to the plane of said gripping faces, said pin being located in an off-set position with relation to the jaws so that the planes of both gripping faces lie on the same side of the axis of the pin and substantially parallel to the longitudinal axis of the lever, said pin and said slot co-operating to enable the pin to be positioned and operated as a pivot for the levers at a plurality of different points in said slot and enabling the levers to be adjusted to hold the jaws at different distances apart with the gripping faces of the jaws held substantially in parallel relation to each other.

In testimony whereof, I hereunto affix my signature.

JOSEPH E. McWILLIAMS.