

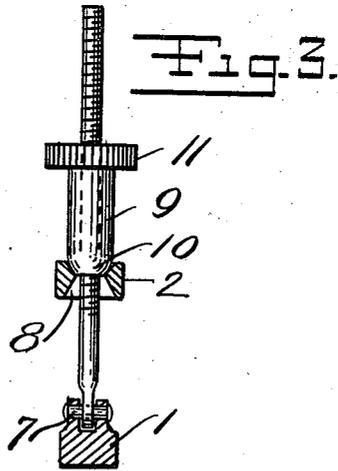
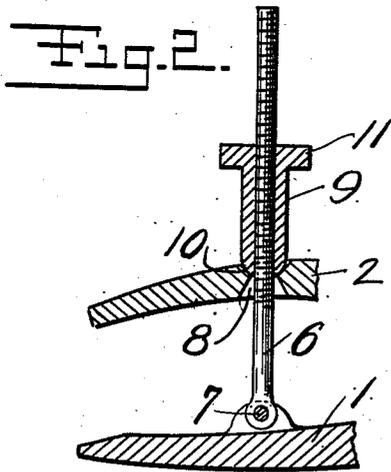
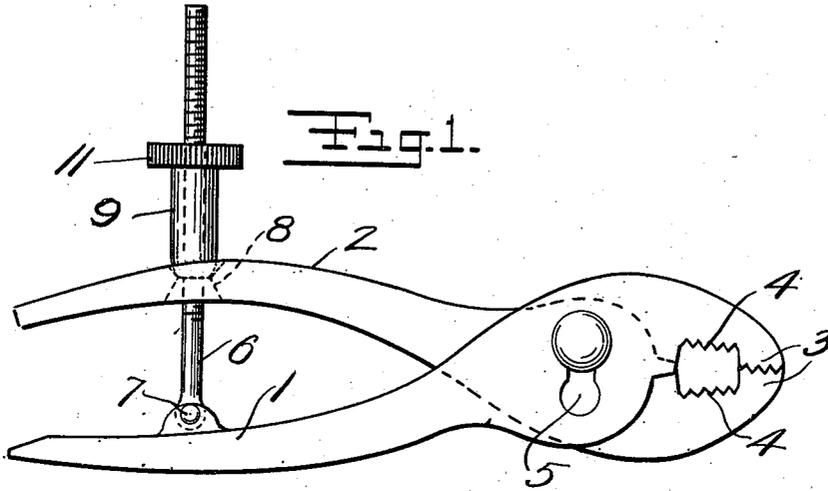
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R. W. CONARD

PLIERS

Filed July 21, 1921



Richard W. Conard Inventor  
By his Attorney  
Mark J. Hunt

# UNITED STATES PATENT OFFICE.

RICHARD W. CONARD, OF ATLANTIC HIGHLANDS, NEW JERSEY.

PLIERS.

Application filed July 21, 1921. Serial No. 486,463.

*To all whom it may concern:*

Be it known that I, RICHARD W. CONARD, a citizen of the United States, residing at Atlantic Highlands, in the county of Monmouth and State of New Jersey, have invented certain new and useful Improvements in Pliers, of which the following is a specification.

This invention relates to improvements in hand tools and has been designed particularly to adapt a pair of pliers to be used as a wrench or a work-holding clamp.

Attachments for pliers are known in which a threaded rod extends through a threaded opening in one handle member of the tool and passes freely through an opening in the other handle member where the rod is fitted with a handle so that it can be turned to move the jaws of the pliers into clamping engagement with an object. This construction has the disadvantage that the threaded rod is subjected to bending strains in different relative positions of the handle members and that a threaded portion of the rod engages and is injured by the edges of the opening through which the rod passes, and also that the projection of the rod beyond both outer faces of the handle members seriously interferes with the effective grasping of the tool handles in the hand of the operator.

The principal object of the invention is to provide improved means for adapting a pair of pliers to be used as a wrench or the like, and which will be free from the objections referred to.

With this and other objects in view the invention includes a threaded bolt having a pivotal connection at one end with one of the handle members of a pair of pliers and extending through an enlarged and specially formed opening in the other handle member. A nut, formed to present the least possible obstacle to the fingers of the user and to prevent engagement of the threaded rod with the edges of the opening, has threaded engagement with the bolt and bears against the outer surface of the apertured handle member in operation.

In the drawing:

Figure 1 is a view in side elevation of a pair of pliers equipped with a locking device embodying a preferred form of the invention;

Figure 2 is a sectional view of the locking device together with a portion of the

pliers handle members to which it is attached; and

Figure 3 is a sectional view taken at right angles to Figure 2.

Referring to the drawing for a more detailed description, a pair of pliers is shown having handle members 1 and 2 provided with knurled nose members 3 and with oppositely disposed knurled notches 4 adapted to seize a nut or a square bolt head when the tool is used as a wrench. The handle members 1 and 2 are pivoted together through a well-known form of slip joint connection 5 which permits of a variation in the limits to which the jaws of the pliers can be opened.

In order to clamp or lock the pliers in a closed and gripped engagement with any desired object, a threaded bolt 6 is attached through a pivotal connection with one of the handle members as at 7. The threaded bolt 6 extends through an opening 8 provided in the other handle member 2 and projects beyond the outer side of the handle member 2 under normal operating positions of the tool. A nut 9 having an elongated portion with a rounded end 10 has threaded engagement with the bolt with the spherical or rounded end 10 adapted to take seating engagement with the outwardly flaring end of the opening 10 to thereby provide a firm and rigid engagement of the nut with the adjacent handle member 2 in any operating position of the handle members.

The nut 9 is preferably provided with a knurled flange 11 at its outer end to afford means for turning the nut into close engagement with the handle. The relatively reduced diameter of the main body portion of the nut produces a construction which readily slips between the fingers of the operator in use and offers a minimum of interference with the use of the tool. At the same time the relatively considerable mass that is possessed by the nut as a whole facilitates the spinning of the nut to place through the substantial momentum developed thereby providing for a quick initial adjustment of the parts.

In order to prevent engagement of the threaded portion of the bolt 6 with the edges of the opening 8 in the handle member 2, the opening is made substantially larger in diameter than the diameter of the bolt, so that the seating of the rounded end 10 of the nut 9 has the effect of centering the bolt

6 in the opening 8 and thereby preventing contact of the bolt with the sides of the opening. In addition the entrance of the opening 8 from the inside of the handle member 2 is formed with an outwardly flaring portion in order to accommodate the bolt member in the varying angular positions which it assumes in the different position of the handles 1 and 2. It will thus be seen that the bolt 6 is held out of engagement with the sides of the opening 8 under all operating conditions.

The pivotal connection of the bolt 6 with the handle 1 is an important feature of the invention, since this connection provides for relative movement of the handle members to any desired extent without subjecting the bolt or other parts to strain. While the pivotal or hinge joint 7 between the bolt and the handle 1 is formed by means of ears or lugs formed integrally with the handle member, it will be clear that other forms of joints can be utilized as may be found convenient.

I claim:

1. In a hand tool of the type having hinged handle members, means for restricting the degree of separation of said handle members comprising a threaded bolt having one end pivotally attached to one of the handle members, the other handle member being provided with an opening having a greater diameter than the diameter of the bolt and through which the bolt extends, said opening having an outwardly flaring formation at each end, and a nut having threaded engagement with said bolt and having a reduced end formed for seating en-

gagement with the outer end of said opening.

2. In a hand tool of the type having hinged handle members, means for holding the handle members in clamping position comprising a threaded bolt having one end pivotally attached to one of the handle members, the other handle member being provided with an opening having a greater diameter than the diameter of the bolt and through which the bolt extends, said opening having an outwardly flaring formation at each end, and a nut having an elongated relatively reduced section having a rounded formation at one end, said rounded end being formed for seating engagement with the flaring outer end of said opening, the other end of said reduced section being provided with an enlarged knurled portion for manual operation.

3. In a hand tool of the type having hinged handle members, means for holding the handle members in a clamping position comprising a threaded bolt having one end attached to one of the handle members, the other handle member being provided with an opening flaring toward the outer side of said handle member, and a nut having an elongated relatively reduced section having a rounded formation at one end, said rounded end being formed for seating engagement with the flaring outer end of said opening, the other end of said reduced section being provided with a knurled flange for manual operation.

In testimony whereof I affix my signature.  
RICHARD W. CONARD.