

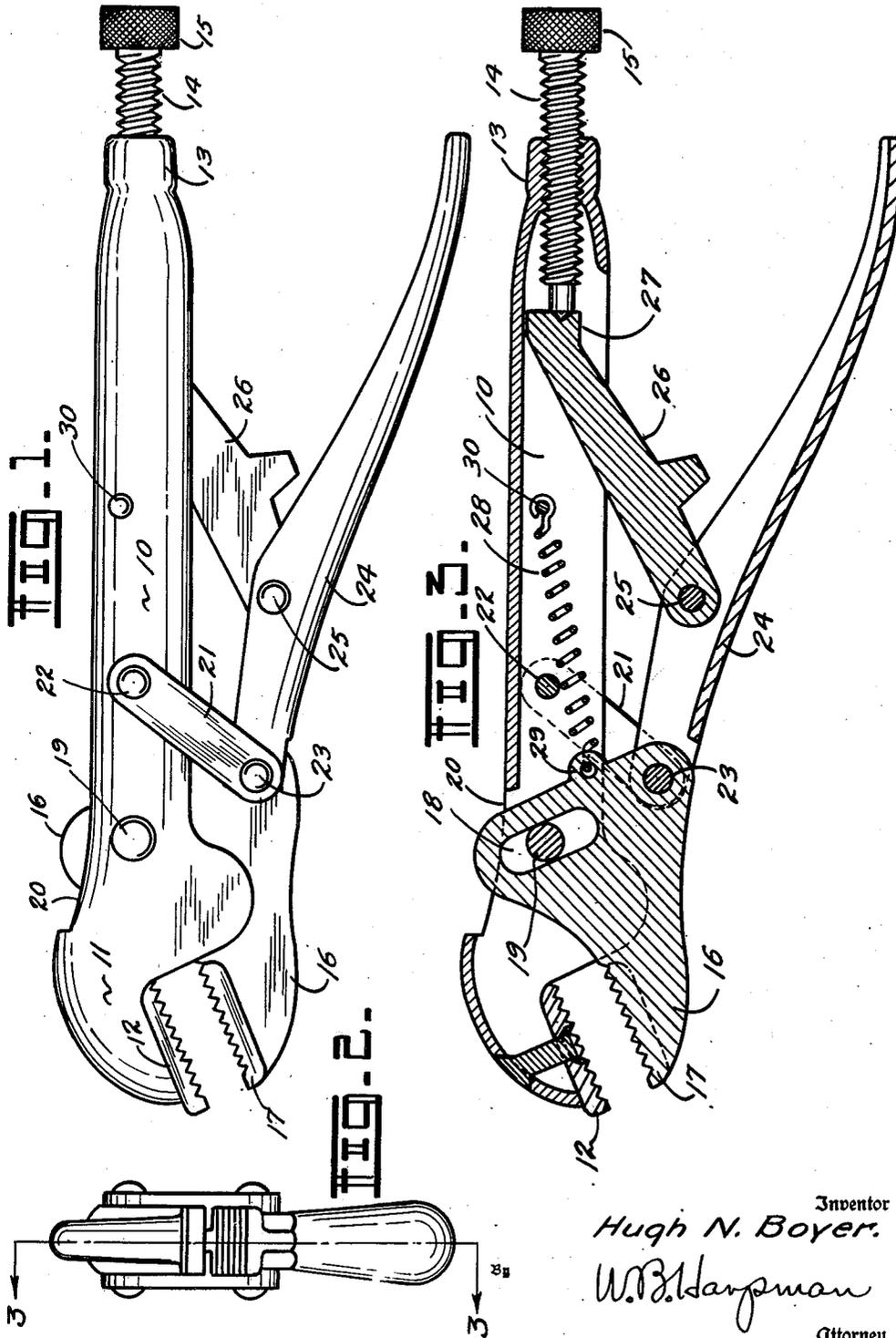
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PLIER WRENCH

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PLIER WRENCH

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2 Claims. (Cl. 81-84)

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This invention relates to a plier wrench and more particularly to a wrench in which the jaw portions are maintained in parallel relationship.

The principal object of the invention is the provision of a plier-type wrench having jaws positioned for operation in parallel relation.

A further object of the invention is the provision of a plier wrench having fixed and movable jaw portions and a handle and variable fulcrum means for imparting motion to the said movable jaw portion.

A still further object of the invention is the provision of a plier wrench having fixed and movable jaw portions and means for moving the movable jaw portion into engagement with the fixed jaw portion and maintaining it in engagement therewith.

A still further object of the invention is the provision of a plier-type wrench having fixed and movable jaw portions, the said movable jaw portion having a combination slot and pivot and multiple lever guiding and motivating means.

The plier wrench shown and described herein has been designed to form a more satisfactory type tool than has heretofore been available particularly with respect to the relative positioning of the jaws of the wrench during their opening and closing operations.

In the various plier-type wrenches heretofore known in the art, several means have been employed to move a movable jaw into opposed relation with a fixed jaw and in so doing pivot the movable jaw with the result that the jaw moves in an arc and does not remain in parallel relation with the fixed jaw of the wrench. This considerably decreases the efficiency of the wrench as the work piece grasped by the wrench is not uniformly held unless it chanced to be the precise size upon which the wrench will close with the jaws in parallel position.

The present invention relates to a plier wrench, the jaw portions of which maintain their parallel relationship from the completely closed position to the widest possible opening. The objects of the invention are achieved by a novel manner of positioning, mounting and moving the movable jaw of the wrench with relation to the fixed jaw thereof.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be

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made within the scope of what is claimed without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein:

Figure 1 is a side view of the plier wrench.

Figure 2 is a front end view of the plier wrench.

Figure 3 is a cross section taken on line 3-3 of Figure 2.

By referring to the drawings and Figures 1 and 2 in particular, it will be seen that the plier wrench comprises a main member 10, the forward portion of which is indicated by the numeral 11 and is provided with a fixed jaw 12 which may or may not be integrally formed with the main body member 10. The rearmost portion of the body member 10 is indicated by the numeral 13 and takes the form of a tubular member internally threaded for the reception of an adjustment screw 14 which in turn is provided with an enlarged knurled end-section 15 and is capable of axial travel with respect to the body member 10 by reason of its threadable engagement with the end portion 13 thereof.

The plier wrench is provided with a movable jaw 16, a portion 17 of which is formed similarly to the jaw 12 and is adapted to register therewith. The movable jaw body 16 is of a generally triangular shape with the apex of the triangular shape forming the foremost portion of the jaw 17. The base of the triangular shape lies at an angle of inclination with respect to the axial dimension of the body member 10. The jaw body 16 has a slot 18 formed therein on the same plane as the base of the triangular form of the movable jaw body 16. In position in the wrench, the movable jaw body 16, and more particularly the slot 18 therein, slidably engages a guide pin 19 positioned transversely of the body member 10, which is generally U-shaped in cross section, with the exception of the area adjacent the movable jaw body 16 which is cut away to form an opening generally indicated by the numeral 20. It will thus be seen that the movable jaw body 16 can be moved toward and away from the fixed jaw 12, and due to its positioning in the body 10 of the wrench, the jaw 17 will always be in parallel relationship to the fixed jaw 12.

Means for imparting movement to the movable jaw body 16 is provided and is responsible for maintaining the parallel spacing of the jaws 12 and 17. This means comprises a pair of similarly formed and positioned links 21, the uppermost ends of which are pivoted to the outer portions of the body member 10 by means of a transversely positioned pivot pin 22 and the rearmost

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ends of which are pivotally affixed to the movable jaw body 16 by means of a pivot pin 23. The pivot pin 23 also serves as a point of attachment for the forward end of a handle member 24 which is provided with a secondary transversely positioned pivot pin 25 rearwardly from the foremost end thereof by means of which a fulcrum link 26 is pivotally affixed to the handle 24. The opposite end of the fulcrum link 26 lies within the body member 10 which is U-shaped in cross section and is provided with a socket 27 within which the innermost pointed end of the threaded adjusting screw 14 engages.

It will thus be seen that the plier wrench herein disclosed is possessed of two desirable qualities, one of which is its ability to maintain the jaws 12 and 17 thereof in parallel relation, and the other of which is its ability to be locked on or snapped on to an object between the jaws 12 and 17 regardless of its size by the simple expedient of adjusting the adjusting screw 14 into or out of the body member 10 and hence varying the effective length of the fulcrum link 26.

In order that the movable jaw body 16 may be normally biased into open position, a coil spring 28 is attached to an eyelet 29 formed in the base of the movable jaw body 16. The other end of the coil spring 28 is affixed to a pin 30 transversely positioned in the body member 10.

By referring now to Figure 3 of the drawings in which a vertical cross section of the plier wrench is shown, it will be seen that the act of moving the handle 24 upwardly toward the body member 10 results in a forward movement of the forward end of the handle 24 by reason of the pair of links 21 describing an arc based on the pivot pin 22. The motion thus imparted to the movable jaw body 16 adjacent its base portion moves the movable jaw body 16 upwardly with respect to the fixed jaw 12 maintaining the jaw 17 in parallel relationship with the jaw 12 throughout the movement by reason of the controlled movement of the movable jaw body 16 resulting from the guiding action of the guide pin 19 cooperating with the slot 18 formed in the movable jaw body 16.

It will be observed that the arc of the pivot pin 23 is controlled by the pair of links 21 based on the pivot pin 22 and that the angular positioning of the slot 18, with respect to the axial plane of the handle member 10 of the plier wrench, imparts a controlled and guided motion to the movable jaw body 16 resulting in the parallel spacing and positioning of the jaws 12 and 17 at all times.

The second action of the wrench, comprising its ability to maintain itself in position on an object positioned between the jaws 12 and 17, results from the positioning of the fulcrum link 26 and its point of pivot on the pivot pin 25 on the handle 24. It will be obvious that when the pivot pins 23 and 25 line up with the socket 27 in the upper rearmost end of the fulcrum link 26, a direct, on center action is obtained and that when the handle 24 is moved further toward the body member 10, an off-center locking

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action is achieved to hold the movable jaw body 16 firmly locked with respect to the body member 10 and jaw 12 therein.

It will thus be seen that a simple and efficient plier wrench has been devised which is simply formed by reason of its unique formation, is capable of maintaining the movable jaw body 16 thereof in parallel relation with the fixed jaw 12 thereof at all times, and that it is also capable of being locked upon an object with a snap tight locking action.

Having thus described my invention, what I claim is:

1. A plier type wrench including a body member having a fixed jaw and a movable jaw positioned therein, a pin positioned transversely of the body member and a slot formed in the said movable jaw and the pin registering in the said slot, means for imparting movement to the said movable jaw, the said means comprising a pair of longitudinally spaced links pivotally engaging the body member, a handle pivotally affixed to said links and spaced with respect to said body member, one of the said pair of longitudinally spaced links and one end of said handle being pivotally affixed on a common pivot on said movable jaw, the other one of the said pair of longitudinally spaced links forming a fulcrum link.

2. A plier type wrench comprising an elongated body member having a fixed jaw at one end thereof disposed angularly with respect to the longitudinal axis of the body member, a movable jaw having a gripping portion disposed outwardly from said fixed jaw and having a base portion disposed angularly outward from said axis, means mounting said movable jaw on said body member comprising means providing a sliding pivotal connection between the inner part of said base portion and said body member and a link pivotally connected at its outer end to the outer end of said base portion and pivotally connected at its inner end to said body member, a handle pivotally connected at one end to said movable jaw member at the point of connection of said link and positioned outwardly of but generally parallel with said body member, and a fulcrum link angularly disposed with respect to said axis and having its outer end pivotally connected to said handle and its inner end pivotally engaging the body member at an adjustable point along the opposite end portion of said body member.

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