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H. D. O'QUINN

3,376,767

CLUTCH-BAR MEANS FOR AN ADJUSTABLE WRENCH

Filed Sept. 8, 1967

2 Sheets-Sheet 1

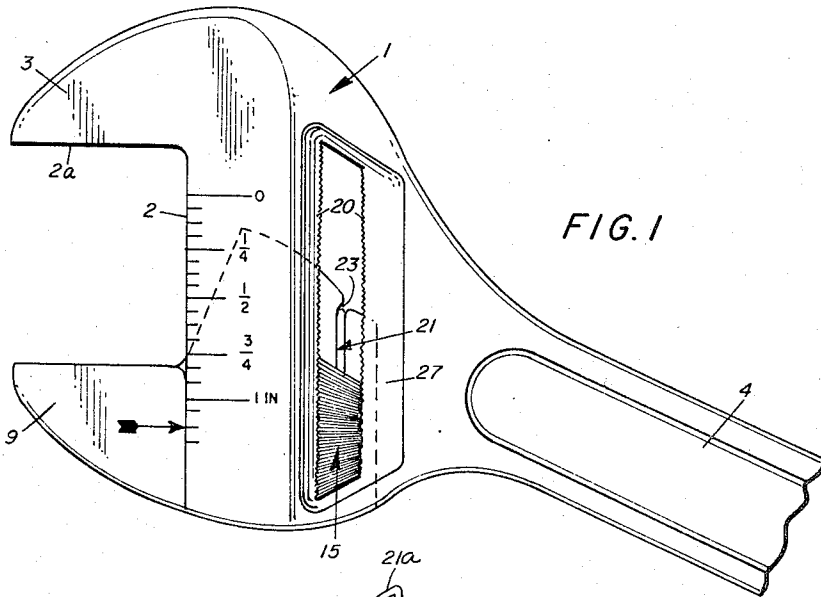


FIG. 1

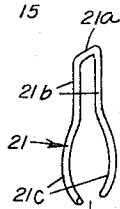


FIG. 4

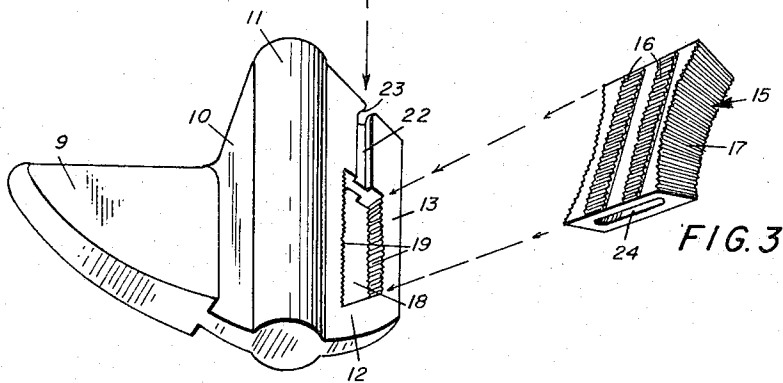


FIG. 2

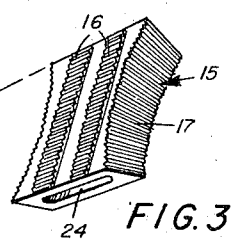


FIG. 3

INVENTOR
HARRY D. O'QUINN

BY *Beale and Jones*
ATTORNEYS

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H. D. O'QUINN

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2 Sheets-Sheet 2

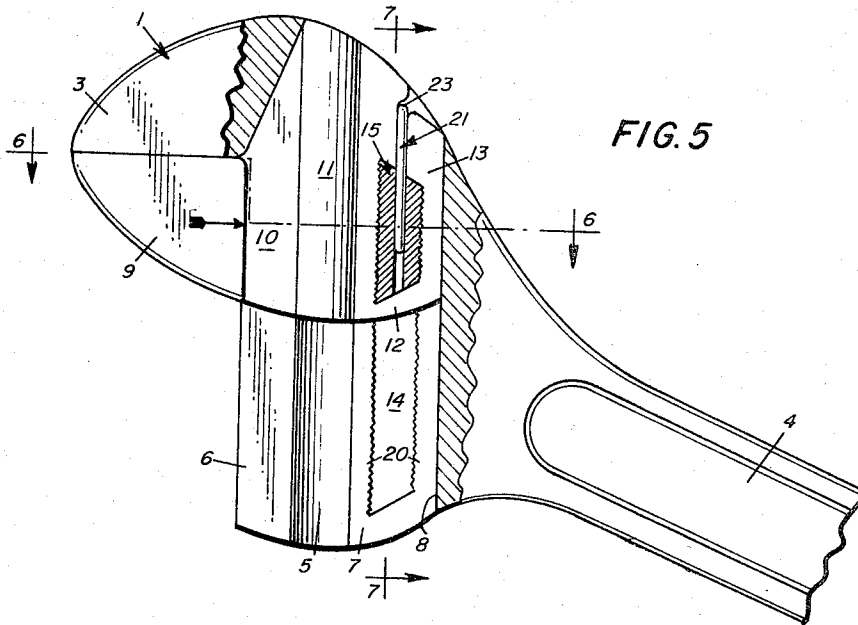


FIG. 5

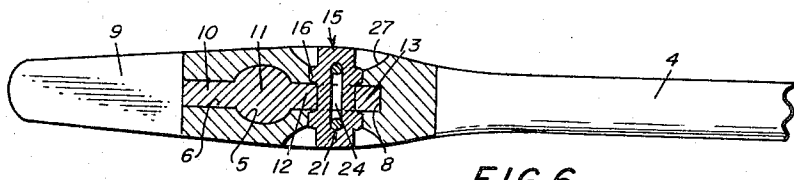


FIG. 6

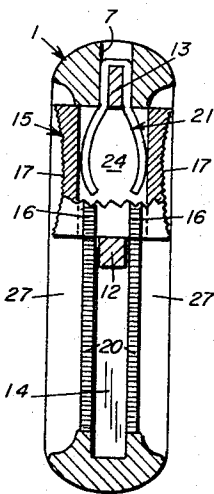


FIG. 7

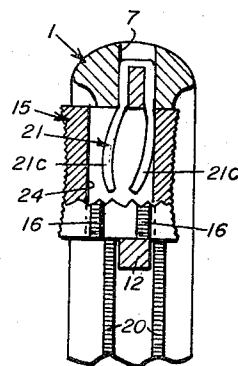


FIG. 8

INVENTOR
HARRY D. O'QUINN

BY *Beale and Jones*
ATTORNEYS

3,376,767

**CLUTCH-BAR MEANS FOR AN
ADJUSTABLE WRENCH**

Harry D. O'Quinn, 2846 Playa Del Rey,
Las Vegas, Nev. 89109

Continuation-in-part of application Ser. No. 523,840,
Jan. 19, 1966. This application Sept. 8, 1967, Ser.
No. 666,284

9 Claims. (Cl. 81-145)

ABSTRACT OF THE DISCLOSURE

This is an adjustable wrench having a main body with fixed jaw extending oppositely to handle portion. There is a first and transverse opening in the main body extending from one face of the flat-like wrench to the other face and adjacently spaced from the fixed jaw. This first opening extends in an elongated manner generally normal to the fixed jaw and has rack teeth on its opposite elongated walls. A second opening defined by a separate slot in the main body opens into and intersects the first and transverse opening. Each face of the body member adjacently surrounding the first and transverse opening is cut away or grooved. A movable jaw adjustable toward and from the fixed jaw has a rib portion thereon received in the second opening in the main body and an integral rib portion that extends into a portion of the first and transverse opening that extends into the main body adjacent to the elongated wall of first and transverse opening remote from the fixed jaw. In the web portion of the movable jaw is a clutch-bar receiving aperture extending from face to face of the web portion and in alignment with the first and transverse opening in the body member. The side walls of this clutch-bar receiving aperture have rack teeth that are in alignment with the rack teeth in the main body. A clutch-bar is received in this clutch-bar receiving aperture and it has rack teeth in spaced apart rows on opposite sides for cooperation with the adjacent spaced apart rack teeth in the body member on each side of the transverse opening therein. The clutch-bar has a recess therein to receive the leg ends of a generally U-shaped spring that loops over and is held at its tight end by slots in the web portion of the movable jaw member. The clutch-bar on being slid in a direction generally perpendicular to the transverse opening in the main body and in the aperture through the movable jaw and against the spring member has its teeth out of engagement with the teeth in the main body permitting sliding adjustment of the movable jaw. The clutch-bar has serrated exposed opposite faces to prevent slippage when operated from either side by the thumb of the hand which holds the wrench.

The application is a continuation-in-part of my co-pending application Ser. No. 523,840, filed Jan. 19, 1966.

Specification

This invention is an improvement in the adjustable wrench in my above referred to copending application. An improvement in the contour of the head of the main body has been made and improvements have been made in the cooperating movable jaw, the clutch-bar and its spring biasing means.

The objects of this invention are:

First, to provide a desirable and convenient wrench of this type in which the adjustable jaw is securely held in its different adjustments by a clutch-bar which is arranged in the wrench so that it can be readily actuated to hold and release the movable jaw by means of only the thumb of the hand holding the wrench.

Second, to provide a wrench of this type wherein a clutch-bar, when assembled into the movable jaw, becomes an integral part of the jaw mechanism and causes a direct adjustment of the movable jaw when the clutch-bar is moved in the direction of either the open or closed position.

Third, to provide a wrench of this type in which the entire adjustment procedure is performed with only the thumb of the hand holding the wrench.

Fourth, to provide a wrench of this type so that it is essentially a one-hand wrench in which the movable jaw can be adjusted to an open or closed position or any intermediate position, easily and quickly, and without confusion, to engage or release a nut or bolt without necessitating the removal of the hand from the wrench and in which the jaws can be easily fitted to a nut or bolt in an obscure or almost inaccessible position without requiring the jaws to be removed from the position straddling the nut or bolt.

Fifth, to provide a wrench of this type in which there are no protrusions or extensions at the top or bottom of the movable jaw, therefore allowing the wrench to fit into a cramped or otherwise inaccessible working area.

Sixth, to provide a wrench of this type wherein the movable jaw is provided with a maximum side and back support to prevent excess wobble in any direction relative to the fixed jaw without interfering with ease of movement of movable jaw.

Seventh, to provide a wrench of this type in which the teeth are located on the wrench body, which permits two racks of teeth to be utilized instead of one, and therefore providing for greater strength in the holding mechanism.

Eighth, to provide a wrench of this type of a strong and durable construction, which is nevertheless practical from a manufacturing standpoint and inexpensive to produce by reason of the small number of parts and fewer stages of assembly in the manufacture thereof.

Ninth, to provide a wrench with a contoured head of the body member that has a slideway extending from one edge to the other edge for receiving the movable jaw member of the wrench.

Tenth, to provide a clutch-bar biasing means in the form of a shaped spring wire connecting between slots formed in the movable jaw and a recess formed in the clutch-bar so that the shaped spring wire is locked in the slots formed in the movable jaw.

With the above and other objects in view, as may appear hereinafter, reference is directed to the accompanying drawings in which:

FIG. 1 is a side elevation of the wrench embodying the invention and with the handle broken away.

FIG. 2 is a perspective view of the movable jaw, detached.

FIG. 3 is a perspective view of the clutch-bar, on an enlarged scale.

FIG. 4 is a perspective view of the clutch-bar spring.

FIG. 5 is a cutaway side elevation showing the movable jaw in the closed position.

FIG. 6 is a transverse longitudinal section thereof on line 6-6, FIG. 5.

FIG. 7 is a cross section thereof on line 7-7, FIG. 5, showing clutch-bar in the engaged position.

FIG. 8 is a fragmentary cross section thereof on line 7-7, FIG. 5, showing clutch-bar in the dis-engaged position.

The wrench includes a body 1 having an end face 2 at one extremity of which is a fixed jaw 3 projecting outward from the end face 2 and having a jaw face 2a at right angles to the end face. A handle 4 extends from the

opposite side of the body 1, preferably at an angle to the end face 2.

Referring to FIGS. 5 and 6, the body 1 is provided with a slideway 5 extending fully across the body member 1. The slideway 5 communicates with the end face by means of slot 6. Opposite from slot 6, beyond slideway 5, is provided a channel 7, which extends to back-wall 8, the back-wall being at right angles to channel 7.

A movable jaw 9 confronts the fixed jaw 3 and is joined to a web 10 which fits slidably in the slot 6. The web is laterally enlarged to form a guide bar 11 which fits slidably into the slideway 5. The guide bar 11 is provided with a rib 12 at its side opposite from the web 10 which rides in the channel 7. Rib 12 extends laterally to provide heel 13 which butts slidably against back-wall 8.

By reason of the web 10, guide bar 11, rib 12, and heel 13 fitting respectively in the slot 6, slideway 5, channel 7, and back-wall 8, the movable jaw 9 may be freely slidable to and from the fixed jaw 3, but is restrained against any displacement by the side bearings afforded by the rib 12 as well as the guide bar 11, the web 10, and the heel 13.

The wrench body 1 is provided with a transverse opening 14 through which clutch-bar 15 is introduced. Clutch-bar 15 is provided with teeth 16 on both sides and knurls 17 on top and bottom.

The wrench is assembled by sliding the movable jaw assembly (FIG. 2) into wrench body 1 and inserting clutch-bar 15 through opening 14 and into an elongated aperture 18 in the rib portion 12 of the movable jaw 9 and in alignment with aperture 14 in the body member 1. Clutch-bar teeth 16 fit through aperture teeth 19 formed in rib portion 12 and prevent movement of jaw assembly when clutch-bar teeth 16 become engaged with body opening oppositely disposed rack teeth 20 formed in the body member at the aperture 14.

Clutch-bar 15 is then locked into assembled position by means of generally U-shaped spring generally indicated at 21 formed of spring wire.

The rib 12 of the movable jaw 9 has oppositely disposed elongated slots 22 formed in the opposite faces thereof in general alignment with the elongated aperture 18. A cross connecting slot 23 in the edge of rib 12 connects the ends of slots 22 that are opposite to the aperture 18. This slot 23 has a narrow throat that is narrower than the slots 22 and the cross sectional diameter of spring 21 at its bight portion 21a. This bight portion 21a snaps into the slot 23 through its narrower throat and the adjacent parallel leg portions 21b of the spring are confined in the slots 22. The outer end portions 21c of the legs of the generally U-shaped spring 21 extend outward in oppositely disposed arcuate form from the parallel legs 21b. The clutch-bar 15 has an axial recess 24 extending throughout the elongated length thereof to receive the spring legs 21c as shown best in FIGURES 7 and 8.

It will be noted in FIGURES 1 and 5 that the contour of the head of the body 1 from approximately *a* to *b* fairs in and is contoured to reduce the head size of the wrench to form a well proportioned head. In FIGURE 5 it will be noted that the slideway 5, slot 6 and channel 7 extend the full width of the head.

Wrench body 1 is provided with a grooved area or bevel 27 which affords access to the adjustment mechanism.

In the operation of the wrench, the movable jaw 9 is moved toward or away from the fixed jaw 3 by depressing clutch-bar 15 from either side of the wrench and then moving the entire adjustment assembly in the desired direction by means of the thumb of the hand holding the wrench. The thumb is prevented from slipping due to grease or other slick substances because the exposed surfaces of the clutch-bar 15 are provided with knurls 17.

When the clutch-bar 15 is depressed, clutch-bar teeth 16 become disengaged with upper and lower racks of body opening rack teeth 20. The upper set of clutch-bar teeth 16 pass into aperture 18, while the lower set pass beyond contact with body teeth 20, as shown in FIG. 8.

Note that spring 21 prevents clutch-bar from being depressed too far. When desired wrench adjustment is achieved, adjustment mechanism is locked into position by simply releasing pressure on clutch-bar. It should be noted that all locking teeth are beveled at top and bottom to provide for self-alignment of said teeth.

The aperture 18 is made to fit clutch-bar 15 to such a close tolerance that maximum stability is provided. The teeth 19 in aperture 18 not only provide an escapeway for clutch-bar teeth 16, but also serve to keep clutch-bar 15 properly aligned when in disengaged position.

One should note that when clutch-bar 15 and spring 21 are properly assembled, the wrench can be fully closed and fully opened, but the movable jaw cannot be unintentionally removed from wrench body.

While a particular embodiment of this invention has been shown and described, it is not intended to limit the same to the exact details of the construction set forth, and it embraces such changes, modifications, and equivalents of the parts and their formation and arrangement as come within the purview of the appended claims.

I claim as my invention:

1. In a wrench comprising a body member having a fixed jaw at one end, rack teeth in a first and transverse opening adjacently spaced from the fixed jaw and a second opening defined by a separate slot in said body member adjacent to and opening to said transverse opening and adjacent the fixed jaw; a movable jaw adjustable toward and from the fixed jaw and having thereon a rib received in said separate slot and an aperture through the movable jaw in alignment with said transverse opening of the body member; a clutch-bar having rack teeth thereon slidably received in said aligned aperture of the movable jaw and the transverse opening in the main body member, said clutch-bar being slidable so that its rack teeth are in and out of engagement with the rack teeth in the body member; the improvement including spring means having engagement with the movable jaw and said clutch-bar that in static position of the spring holds the clutch-bar with its rack teeth engaged with rack teeth in the transverse opening of the main body member and the movable jaw, said clutch-bar on being slid against the spring and disengaging its teeth from the teeth in the body member permitting the movable jaw to be adjusted in its position with respect to the fixed jaw, said aperture in the movable jaw being elongated and extending in the direction of the first and transverse opening in the fixed jaw, said movable jaw having a web portion in which said aperture extends therethrough, said web having oppositely disposed elongated slots in the opposite faces thereof and extending in the elongated direction of its elongated aperture, said clutch-bar having a recess therein in alignment with said elongated slots in the web portion of the movable jaw and wherein said spring means is a generally U-shaped spring member having leg portions thereof adjacent its bight portion received by the web portion of the movable jaw and the oppositely disposed elongated slots therein and the rest of the spring member protruding into said recess in the clutch-bar and having restraining engagement therewith.

2. A wrench in accordance with claim 1 wherein said rack teeth in the first and transverse opening are arranged in spaced apart position facing each other on opposite sides of said first and transverse opening in the main body; said clutch-bar having its rack teeth arranged in two spaced apart rows on opposite sides of the clutch-bar for cooperation with said adjacent spaced apart rack teeth in the body member on each side of the first and transverse opening.

3. A wrench in accordance with claim 1 wherein said movable jaw has rack teeth on the walls of the aperture extending therethrough that are in alignment with the rack teeth in the clutch-bar member.

4. A wrench in accordance with claim 1 wherein said movable jaw web portion has a connecting slot therein

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connecting said oppositely disposed elongated slots in the opposite faces thereof at their ends opposite to the aperture in the movable jaw, said connecting slot having a mouth portion that is being narrower than the slots that it connects and the cross sectional thickness of the bight portion of the spring member which is held in snapped in position in the connecting slot.

5. A wrench in accordance with claim 1 wherein said first and transverse opening in the main body has said second opening defined by a separate slot therein opening to and intersecting said first and transverse opening and said web portion of the movable jaw has its outer edge portion adjacent the slot therein received in an adjacent portion of said second opening and slot in the body member that intersects the first and transverse opening in the body member.

6. A wrench in accordance with claim 1 wherein said body member on each face thereof adjacently surrounding the transverse opening is cut away or grooved, said rack teeth in the transverse opening are arranged in spaced apart position facing each other on opposite sides of said transverse opening in the main body, said clutch-bar having its rack teeth arranged in two spaced rows on opposite sides of the clutch-bar for cooperation with said adjacent spaced apart rack teeth in the body member on each side of the transverse opening.

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7. A wrench in accordance with claim 5 wherein said clutch-bar has exposed surfaces that extend in said cut away or grooved portions of the body member adjacent the transverse opening and said exposed surfaces are serrated.

8. A wrench in accordance with claim 7 wherein the body member extends in an elongated portion generally opposite to said fixed jaw thereof and this elongated portion serves as a handle portion and wherein said clutch-bar exposed faces extend into the clutch-bar in a concave manner and the serrations therein extend generally parallel to each other in the direction of said handle portion of the body member so as to be easily grasped by the thumb and forefinger of the hand of the operator.

9. A wrench in accordance with claim 8 wherein the recesses in the clutch-bar that receives a portion of the spring member extends all the way through the clutch-bar.

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25 MILTON S. MEHR, *Primary Examiner.*