Dec. 19, 1967 H. D. O'QUINN 3,358,534

CLUTCH-BAR MEANS FOR AN ADJUSTABLE WRENCH

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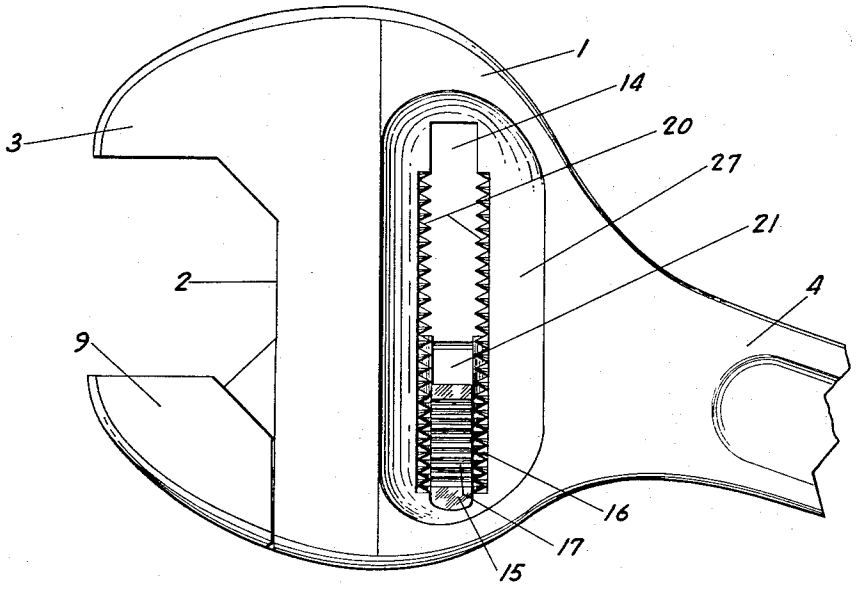

FIG. 1

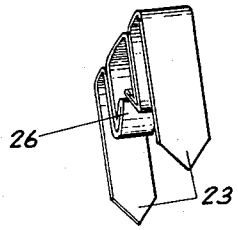

FIG. 4

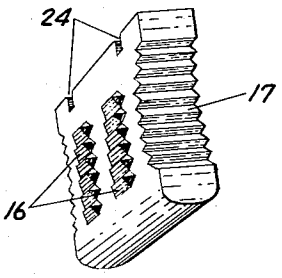

FIG. 3

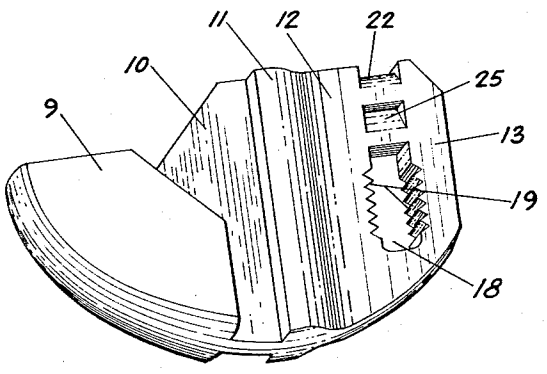

FIG. 2

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CLUTCH-BAR MEANS FOR AN ADJUSTABLE WRENCH

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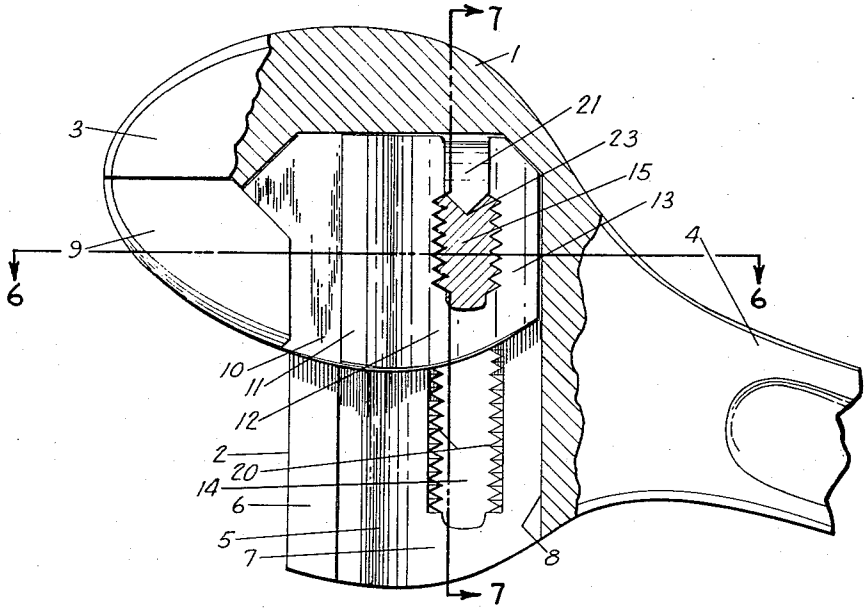

FIG. 5

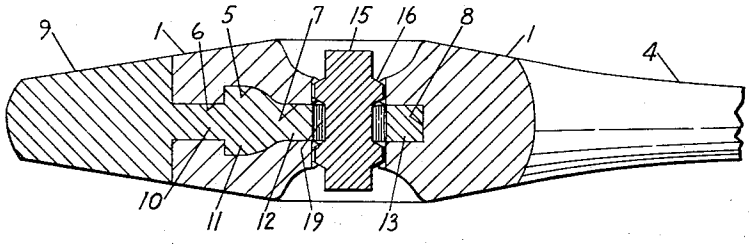

FIG. 6

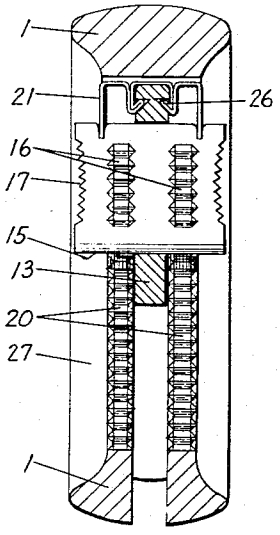

FIG. 7

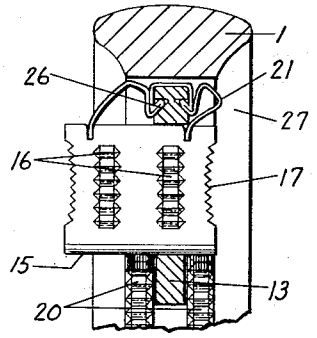

FIG. 8

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CLUTCH-BAR MEANS FOR AN ADJUSTABLE WRENCH

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Filed Jan. 19, 1966, Ser. No. 523,840
5 Claims. (Cl. 81—145)

This invention relates to improvements in adjustable jaw wrenches of the type in which the jaws project lengthwise at one end of the wrench with their gripping faces at angle to the longitudinal axis of the handle of the wrench. In these wrenches as heretofore most commonly constructed, the movable jaw is adjusted and held by a knurled worm or screw which is journaled in a transverse opening in the body of the wrench and engages threads or teeth on the edge of the shank of the movable jaw. These adjusting worms cause a slow adjustment of the jaw and also provide some confusion as to which direction to turn the worm in order to achieve desired movement of the jaw. In other wrenches of this type, the movable jaw is adjusted toward a closed position by pressing on an extension projecting from the jaw and is held in place by a spring-biased latch with ratchet teeth which cooperate with teeth on the movable jaw. The latch also releases the jaw when a wider adjustment of the wrench is desired. This type of latch is awkward to use because, in addition to a thumb on one side of the wrench, a finger is also required on the opposite side in order to grip the latch for release of the movable jaw. Depending upon limitations of space in the working area, using a finger on the opposite side is sometimes inconvenient and often impossible.

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.

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, on an enlarged scale.

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 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 from its upper end to its lower end parallel with the end face **2**. The slideway 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**.

The movable jaw **9** confronts the fixed jaw **3** and is joined to a web **10** which fits slidably in the slot **6**. The web **10** 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 and inserting clutch-bar **15** through opening **14** and into aperture **18**. Clutch-bar teeth **16** fit through aperture teeth **19** and prevent movement of jaw assembly when clutch-bar teeth **16** become engaged with body opening rack teeth **20**.

Clutch-bar **15** is then locked into assembled position by means of spring **21** which fits into gap **22** with spring tip **23** being at the same time inserted into notch **24** on the clutch-bar **15**. Referring to FIG. 5, the top of the clutch-bar is cut away to show fully-assembled position of spring.

A recess **25** is provided in the jaw assembly which receives spring flange **26**. Gap **22** is beveled in such a manner that spring **21** can be assembled with enough pressure to force flange **26** to seat itself into recess **25** resulting in a very strong holding force when said pressure is released.

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.

What is claimed is:

1. A wrench comprising in combination 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 joining with a slideway and a channel all aligned in said body member adjacent to and having the channel portion thereof 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 channel and a guide bar attached to the rib received in said slideway of the body member 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 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; and 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 the rack teeth in the transverse opening of the main body member and the movable jaw is held in adjusted position with respect to the fixed 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 and on release of the clutch-bar from its slide position, said spring sliding the clutch-bar so that its teeth are engaged with the teeth of the body member and said spring is again in static position.

2. A wrench comprising in combination 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 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; and 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 the rack teeth in the transverse opening of the main body member and the movable jaw is held in adjusted position with respect to the fixed 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 and on release of the clutch-bar from its slid position, said spring sliding the clutch-bar so that its teeth are engaged with the teeth of the body member and said spring is again in static position.

3. A wrench in accordance with claim **2** 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 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 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 transverse opening, whereby the clutch-bar on being slid in a direction generally perpendicular to the transverse opening of the main body and in said aperture through the movable jaw and against said spring has its teeth out of engagement with the teeth in the main body permitting sliding adjustment of the movable jaw.

4. A wrench in accordance with claim **3** wherein said clutch-bar has exposed surfaces that extend in said cut away or grooved portions of the main body adjacent the transverse opening and said exposed surfaces are knurled.

5. A wrench comprising in combination a body member having a fixed jaw at one end, rack teeth in a transverse opening adjacently spaced from the fixed jaw and 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 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; and 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 the rack teeth in the transverse opening of the main body member and the movable jaw is held in adjusted position with respect to the fixed 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 and on release of the clutch-bar from its slid position, said spring sliding the clutch-bar so that its teeth are engaged with the teeth of the body member and said spring is again in static position, said transverse opening in the main body having said separate slot therein opening to and intersecting said transverse opening and said body member on each face thereof adjacently surrounding the transverse opening being 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 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 transverse opening, whereby the clutch-bar on being slid in a direction generally perpendicular to the transverse opening of the main body and in said aperture through the movable jaw and against said spring has its teeth out of engagement with the teeth in the main body permitting sliding adjustment of the movable jaw, said clutch-bar having exposed surfaces that extend in said cut away or grooved portions of the main body adjacent the transverse opening and said exposed surfaces are knurled, said rib of the movable jaw has opposed recesses in opposite faces thereof adjacent a face of said aperture extending therethrough, said clutch-bar has spaced apart recesses extending into a face thereof

that is adjacent said face of the aperture in the rib portion of the movable jaw having said recess in the rib portion there-adjacent, said spring being a bar type spring bent into a general U-shape having the bight portion thereof formed with inwardly and oppositely extending flange portions received in said opposed recesses in the opposite faces of the movable jaw rib portion and the adjacent legs thereof extending with their ends received in said adjacent spaced apart recesses in the clutch bar.

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MILTON S. MEHR, *Primary Examiner.*