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TOGGLE OPERATED SLIDABLE JAW WRENCH

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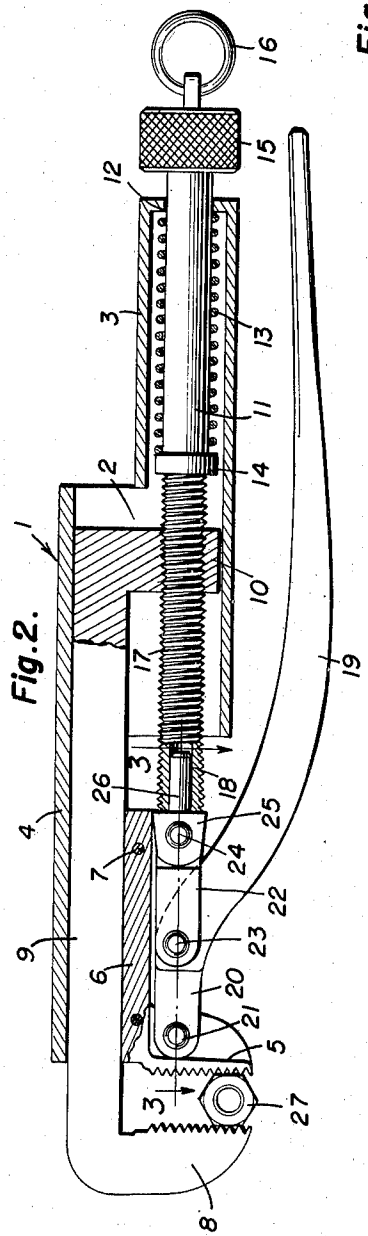


Fig. 2.

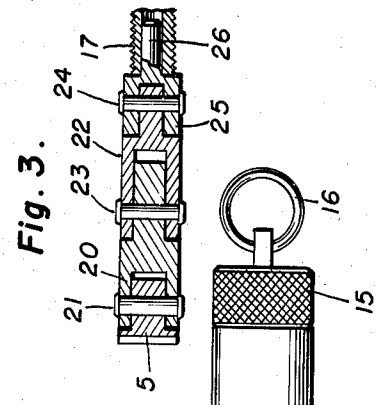


Fig. 3.

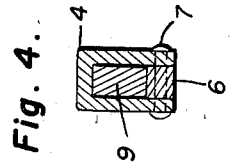


Fig. 4.

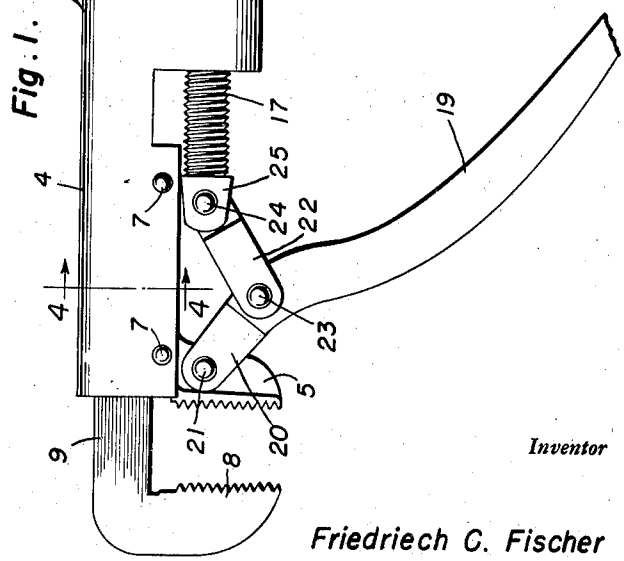


Fig. 1.

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TOGGLE OPERATED SLIDABLE JAW WRENCH

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2 Claims. (Cl. 81—88)

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My invention relates to wrenches of the sliding jaw type forming the subject matter of my copending application Serial No. 649,968, filed February 25, 1946, and over which the instant invention is designed as an improvement.

The primary object of the instant invention is to provide a wrench embodying a fixed jaw, and a relatively slidable jaw having a shank, with toggle operated means for sliding the shank back into the handle of the wrench in closing the jaws, the toggle operated means being arranged so as to obviate possible injury thereby to the hand grasping the handle, all so as to render the wrench safer to use than other wrenches of a similar type.

Other and subordinate objects, also comprehended by my invention, together with the precise nature of my improvements, will be readily understood when the succeeding description and claims are read with reference to the drawing accompanying and forming part of this specification.

In said drawing:

Figure 1 is a view in side elevation of my improved wrench, in the preferred embodiment thereof, and showing the hand lever swung away from the handle to break the toggle and open the jaws;

Figure 2 is a view in longitudinal section showing the hand lever swung toward the handle to straighten the toggle and close the jaws on a nut;

Figure 3 is a detail view in longitudinal section taken on the line 3—3 of Figure 2; and,

Figure 4 is a detail view in transverse section taken on the line 4—4 of Figure 1.

Referring to the drawing by numerals, my improved wrench, in the embodiment shown, comprises an elongated hollow handle 1 with an intermediate section 2 of generally oval form in cross section having a cylindrical tail end extension 3 and a front end extension 4 substantially U-shaped in cross section, said extensions 3, 4 being laterally offset upon opposite sides of the longitudinal center of the section 2.

A fixed serrated jaw 5 extends laterally from the front end of the front end extension 4, at a right angle thereto, and oppositely from the direction in which said extension is offset, said jaw having a right angled end shank 6 of square cross section fitted in between the edges of said extension 4 with bolts 7 securing the same to said edges, said shank 6 extending rearwardly along said extension 4 and functioning as a filler between said edges and also in an additional capacity presently seen.

A movable serrated jaw 8 is opposed to the fixed jaw 5, forwardly thereof, on the front end of a squared shank 9 confined in the front end extension 4, by the shank 6, and being endwise

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slidable in said extension and in the section 2 forwardly and rearwardly to open and close the jaws 5, 8 respectively. A lateral rear end lug 10 on the shank 9 extends from the same side thereof as the movable jaw 8 and is adapted to play forwardly and rearwardly in the intermediate section 2 of the handle 1.

A presetting shaft 11 for the movable jaw 8 extends through the rear end extension 3 and the intermediate section 2 and, for a short distance, out of the same, and is rotatably mounted adjacent its rear end in a reduced rear end opening 12 in said extension 3, the presetting shaft 11 being endwise movable forwardly and rearwardly, as will be clear. A coil spring 13 surrounding the presetting shaft 11, between the rear end of the rear end extension 3 and a collar 14 on said shaft, opposes rearward movement of said shaft.

A knurled collar 15 on the rear end of the presetting shaft 11 is adapted to abut the rear end of the rear end extension 3 and limit forward movement of said shaft 11. The collar 15 forms a hand grip for rotating the presetting shaft 11.

A rear end hanger ring 16 on the presetting shaft 11 provides for suspending the wrench when desired.

Forwardly of the collar 15, the presetting shaft 11 is threaded, as at 17, through the lug 10. An axial front end socket 18 is provided in the presetting shaft 11 for a purpose presently apparent.

An outwardly bowed hand lever 19 is pivotally mounted on the fixed jaw 5 to swing toward and from the handle 1 and by means of a bifurcated front end 20 thereon straddling said jaw 5, and a pivot pin 21 passing through said end 20 and through said jaw.

A bifurcated link 22 straddling the hand lever 19 in the rear of the pivot pin 21, and pivoted at one end to said lever, as by a pin 23, has its other end pivoted, as by a pin 24, to a bifurcated head 25 of a stud 26 rotatable in the before mentioned socket 18. As will be manifest, the hand lever 19, between the pivot pin 21 and the pivot pin 23, and together with the link 22 forms a toggle relative to which the presetting shaft 11 is rotatable.

Referring now to the operation of the described wrench, with the hand lever 19 swung away from the handle 1, in the position shown in Figure 2, the described toggle will be broken, as shown, and the presetting shaft 11 advanced outwardly of the handle 1 by the coil spring 13 to advance the lug 10, shank 9, and the movable jaw 8 so as to open the jaws 5, 8. Now, by rotating the presetting shaft 11, the lug 10 may be fed along the same to preset the movable jaw 8 into the approximate position desired relative to the fixed jaw 5. Then by swinging the hand lever 19 to-

ward the handle 1, the described toggle may be straightened, as shown in Figure 2, so that the presetting shaft 11 will be pushed thereby inwardly of the handle 1 in opposition to the coil spring 13 to retract the movable jaw 8, in a manner which will be clear, and thereby close the jaws 5, 8, for instance on a nut 27. As soon as the described toggle is straightened out, the pivot pins 21, 23, 24 are aligned in the axis of the presetting shaft 11 to form a dead center lock holding the hand lever 19 in an inward limit of movement thereof and the jaws 5, 8 closed. The described toggle, when straightened out, engages the shank 6 and the straightened out position of said toggle is thereby established. Obviously, as soon as the described toggle is broken, the coil spring 13 will act to advance the presetting shaft 11 and thereby advance the movable jaw 8 to open the jaws 5, 8.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention, without further explanation.

Manifestly, the invention, as described, is susceptible of modification, without departing from the inventive concept, and right is herein reserved to such modifications as fall within the scope of the appended claims.

What I claim is:

1. In a wrench, a hollow handle, a fixed jaw extending laterally from one end of the handle, a movable jaw opposed to the fixed jaw and having a shank slidably fitted in said handle to be advanced out of the same and retracted therein and correspondingly move the movable jaw relative to the first jaw, a shaft slidably extended through said handle for advance and retraction and threadedly connected to said shank in laterally offset relation thereto to advance and retract the same upon rotation of said shaft, a hand lever pivoted on said fixed jaw for swinging toward and away from said handle, a link pivoted at one end to said hand lever with its other end connected to said shaft and forming with a part of said hand lever a toggle between said fixed jaw and one end of said shaft movable into straightened out position into alignment with said shaft to exert a push against said shaft for retracting the same when said hand lever is swung toward said handle, and spring means in said handle for advancing said shaft.

2. In a wrench, a hollow handle, a fixed jaw extending laterally from one end of the handle, a movable jaw opposed to the fixed jaw and having a shank slidably fitted in said handle to be advanced out of the same and retracted therein and correspondingly move the movable jaw relative to the first jaw, a shaft slidably extended through said handle for advance and retraction and connected to said shank in laterally offset relation thereto to advance and retract the same, a hand lever pivoted on said fixed jaw for swinging toward and away from said handle, a link pivoted at one end to said hand lever with its other end connected to said shaft and forming with a part of said hand lever a toggle between said fixed jaw and one end of said shaft movable into straightened out position into alignment with said shaft to exert a push against said shaft for retracting the same when said hand lever is swung toward said handle, and spring means in said handle for advancing said shaft, said shaft being rotatable and the connection between the same and said shank comprising a lateral lug on the shank through which said shaft is threaded and providing for advancing and retracting said shank by rotation of said shaft in opposite directions, respectively, to preset said movable jaw.

FRIEDRIECH C. FISCHER.

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The following references are of record in the file of this patent:

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