

UNITED STATES PATENT OFFICE

2,427,608

LOCK FOR WRENCHES

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Application October 18, 1944, Serial No. 559,273

6 Claims. (Cl. 81-165)

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This invention relates to improvements in wrenches and more particularly to those wrenches known as adjustable end wrenches, and often called "crescent" wrenches.

One of the important objects of the present invention is to provide a locking device for holding the jaws of the wrench in their adjusted position, against accidental movement.

More particularly the present invention embodies certain improvements over the locking device embodied in my copending application, Serial Number 508,000, filed October 28, 1943.

A further object is to provide a wrench in which the locking means can be incorporated into the wrench structure without necessitating any modification of the parts of the wrench.

Other objects and advantages will become apparent from the following description when taken in connection with the accompanying drawing.

In the drawing forming a part of this specification and in which like reference characters designate corresponding parts throughout the several views:

Figure 1 is a side elevation of a "crescent" type wrench showing the locking device in its inoperative position;

Figure 2 is a similar view, disclosing the locking device in its operative position, whereby the rotatable worm is locked against rotation and the jaws of the wrench held in their adjusted position;

Figure 3 is an enlarged sectional view taken approximately on the line 3-3 of Figure 1 looking in the direction of the arrows, and

Figure 4 is a vertical sectional view through the locking device per se.

In the drawing, wherein for the purpose of illustration, is shown the preferred embodiment of my invention, the numeral 1 designates generally an adjustable end wrench, often called a "crescent" wrench, the same comprising a handle 2 having an enlarged head or body 3 formed on one end thereof.

A fixed or stationary jaw 4 is carried by the head or body 3 which cooperates with the movable jaw 5, mounted on the web portion 6. This web portion is slidable in the transverse slot 7 formed in the outer face of the head or body 3. A rack 8 is carried by the inner or lower portion of the web 6 and the inner portion of the slot 7 is enlarged to accommodate the rack 8.

A substantially rectangular shaped opening 9 is formed in the enlarged head or body 3. This opening communicates with the bottom of the slot 7 and the toothed portion of the rack 8

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extends into this opening, as clearly shown in the drawing.

A pin or screw 10 extends transversely through the central portion of the opening 9 and journaled for rotation on this pin in the opening 9 is the knurled worm 11. The worm 12 cooperates with the rack 8 for moving the jaw 5 toward or away from the fixed jaw 4, in the manner and for the purpose well known in the art.

My improved locking device comprises a disc-like member 12 formed of spring steel. This disc-like member is formed with a central opening 13 whereby the member may be mounted for rotation on the transverse pin 10 between the inner end of the worm 11 and the adjacent side wall 14 of the opening 9. The inner end of the worm 11 is spaced from the adjacent side wall of the opening to accommodate the locking device.

A knurled flange 15 is formed around the major portion of the periphery of the disc-like member 12 to facilitate manual rotation of the locking device in the manner to be presently described.

Forming a salient part of the locking device is the spring tooth 16 that extends at an obtuse angle from the unflanged periphery of the disc-like member 12.

Also forming an important part of the locking device is the stop forming element 17 that extends laterally from the disc-like member 12 adjacent to the angularly disposed spring tooth 16.

The operation of the improved locking device may be briefly stated as follows: With the locking device disposed in the position shown in Figure 1, the spring locking tooth is in its inoperative position, out of contact with the inner side wall 14 of the opening 9. When in this position, the locking device will not interfere with the free rotation of the knurled worm 11. The knurled worm may then be freely rotated by the fingers of the user to move the jaws 5 toward or away from the stationary jaw 4, until the proper adjustment of the jaws has been attained.

Then the knurled flange 15 of the disc-like member 12 is grasped and the disc-like member is rotated on the pin 10 so as to move the spring tooth 16 upwardly into the opening 9 until this tooth is brought into wedging engagement between the inner end of the worm 11 and the side wall 14 of the opening 9.

When the locking device is in the position shown in Figure 2 of the drawing, the worm 11 will be locked against rotation, thereby holding the jaws in their properly adjusted position against accidental movement.

The stop element 17 cooperates with the face of the head or body 3 to limit the rotation of the disc-like member 12 in either direction, to hold the locking device in either an operative or inoperative position.

My improved locking device can be operated from either side of the wrench with equal facility and will, at all times be positive and efficient in carrying out the purposes for which it is designed.

While I have shown the preferred embodiment of my invention, it is to be understood that various changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention and the scope of the appended claims.

Having thus described my invention, what I claim is:

1. In an adjustable wrench, a body having a fixed jaw thereon, a slidable jaw mounted in said body, a toothed rack carried by the slidable jaw, said body having an enlarged opening formed therein, the side faces of the opening being straight and smooth, a pin extending transversely through the opening, a worm positioned in said opening and journaled for rotation on said pin, said worm cooperating with the toothed rack for moving the slidable jaw with respect to the fixed jaw, the inner end of the worm being straight and smooth and being spaced from the adjacent side wall of the opening in the body, a disc-like member rotatably mounted on the pin and disposed between the inner end of the worm and the adjacent side wall of the opening in the body, and a spring tooth formed on the disc-like member adapted to wedge between the inner end of the worm and the adjacent side wall of the opening when said member is moved in one direction to lock the worm against rotation and hold the slidable jaw in its adjusted position.

2. In an adjustable wrench, a body having a fixed jaw thereon, a slidable jaw mounted in said body, a toothed rack carried by the slidable jaw, said body having an enlarged opening formed therein, the side faces of the opening being straight and smooth, a pin extending transversely through the opening, a worm positioned in said opening and journaled for rotation on said pin, said worm cooperating with the toothed rack for moving the slidable jaw with respect to the fixed jaw, the inner end of the worm being straight and smooth and being spaced from the adjacent side wall of the opening in the body, a disc-like member rotatably mounted on the pin and disposed between the inner end of the worm and the adjacent side wall of the opening in the body, a spring tooth formed on the disc-like member adapted to wedge between the inner end of the worm and the adjacent side wall of the opening when said member is moved in one direction to lock the worm against rotation and hold the slidable jaw in its adjusted position, and a stop forming element carried by the disc-like member cooperating with the face of the body for limiting the rotation of the disc-like member in either direction.

3. In an adjustable wrench, a body having a fixed jaw thereon, a slidable jaw mounted in said body, a toothed rack carried by the slidable jaw, said body having an enlarged opening formed therein, the side faces of the opening being straight and smooth, a pin extending transversely through the opening, a worm positioned in said opening and journaled for rotation on said pin, said worm cooperating with the toothed rack for

moving the slidable jaw with respect to the fixed jaw, the inner end of the worm being straight and smooth and being spaced from the adjacent side wall of the opening in the body, a disc-like member rotatably mounted on the pin and disposed between the inner end of the worm and the adjacent side wall of the opening in the body, said disc-like member being formed of spring steel, an angularly disposed tooth formed on the periphery of the disc-like member and adapted to wedge between the inner end of the worm and the adjacent side wall of the opening in the body when the disc-like member is moved to one position to lock the worm against rotation and hold the slidable jaw in its adjusted position.

4. In an adjustable wrench, a body having a fixed jaw thereon, a slidable jaw mounted in said body, a toothed rack carried by the slidable jaw, said body having an enlarged opening formed therein, the side faces of the opening being straight and smooth, a pin extending transversely through the opening, a worm positioned in said opening and journaled for rotation on said pin, said worm cooperating with the toothed rack for moving the slidable jaw with respect to the fixed jaw, the inner end of the worm being straight and smooth and being spaced from the adjacent side wall of the opening in the body, a disc-like member rotatably mounted on the pin and disposed between the inner end of the worm and the adjacent side wall of the opening in the body, said disc-like member being formed of spring steel, an angularly disposed tooth formed on the periphery of the disc-like member and adapted to wedge between the inner end of the worm and the adjacent side wall of the opening in the body when the disc-like member is moved to one position to lock the worm against rotation and hold the slidable jaw in its adjusted position, and a stop forming element projecting laterally from the disc-like member for cooperation with the face of the body to limit the rotation of the disc-like member in either direction.

5. In an adjustable wrench, a body having a fixed jaw thereon, a slidable jaw mounted in said body, a toothed rack carried by the slidable jaw, said body having an enlarged opening formed therein, a pin extending transversely through the opening, a worm positioned in said opening and journaled for rotation on said pin, said worm cooperating with the toothed rack for moving the slidable jaw with respect to the fixed jaw, the inner end of the worm being spaced from the adjacent side wall of the opening in the body, a disc-like member rotatably mounted on the pin and disposed between the inner end of the worm and the adjacent side wall of the opening in the body, said disc-like member being formed of spring steel, a knurled actuating flange formed on the periphery of the disc-like member, and an angularly disposed tooth projecting from the periphery of the disc-like member and adapted to wedge between the inner end of the worm and the adjacent side wall of the opening in the body when the disc-like member is rotated to its operative position to lock the worm against rotation and hold the slidable jaw in its adjusted position.

6. In an adjustable wrench, a body having a fixed jaw thereon, a slidable jaw mounted in said body, a toothed rack carried by the slidable jaw, said body having an enlarged opening formed therein, a pin extending transversely through the opening, a worm positioned in said opening and journaled for rotation on said pin, said worm cooperating with the toothed rack for moving

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the slidable jaw with respect to the fixed jaw, the inner end of the worm being spaced from the adjacent side wall of the opening in the body, a disc-like member rotatably mounted on the pin and disposed between the inner end of the worm and the adjacent side wall of the opening in the body, said disc-like member being formed of spring steel, a knurled actuating flange formed on the periphery of the disc-like member, an angularly disposed tooth projecting from the periphery of the disc-like member and adapted to wedge between the inner end of the worm and the adjacent side wall of the opening in the body when the disc-like member is rotated to its operative position to lock the worm against rotation and hold the slidable jaw in its adjusted position, and a stop forming element projecting laterally from the disc-like member adjacent the angularly disposed tooth for cooperation with the

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face of the body to limit the rotation of the disc-like member to an operative or inoperative position.

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