O. M. WEIR.

RATCHET WRENCH.

APPLICATION FILED MAY 22, 1908.

927,618. Patented July 13, 1909.

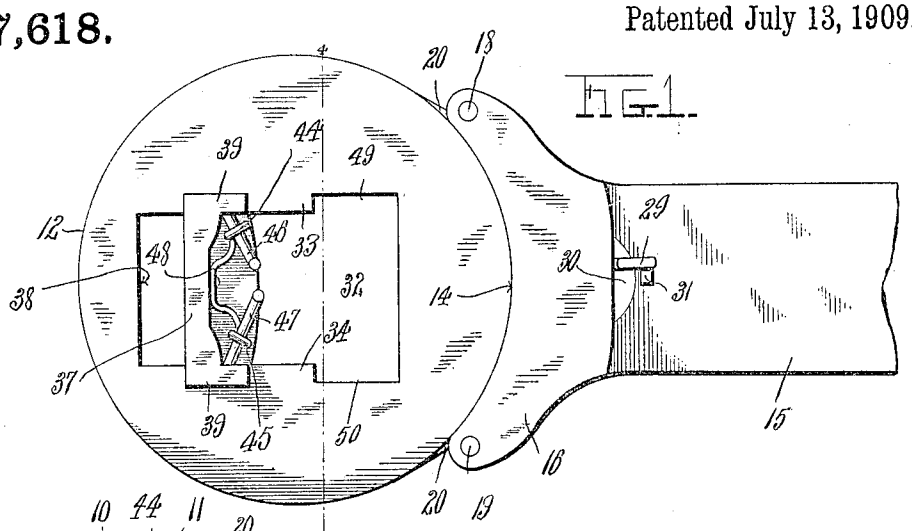


FIG. 1.

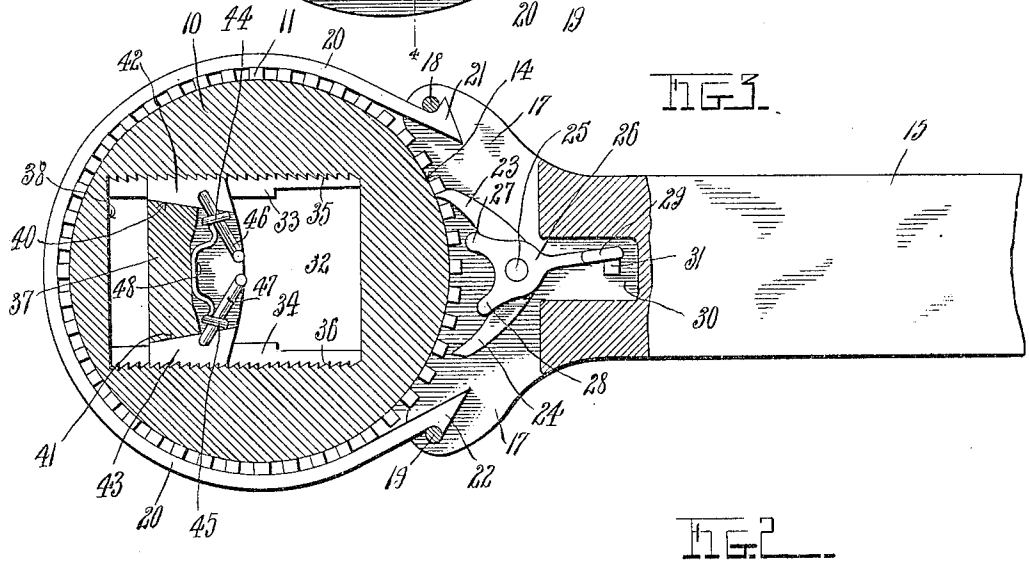


FIG. 3.

FIG. 2.

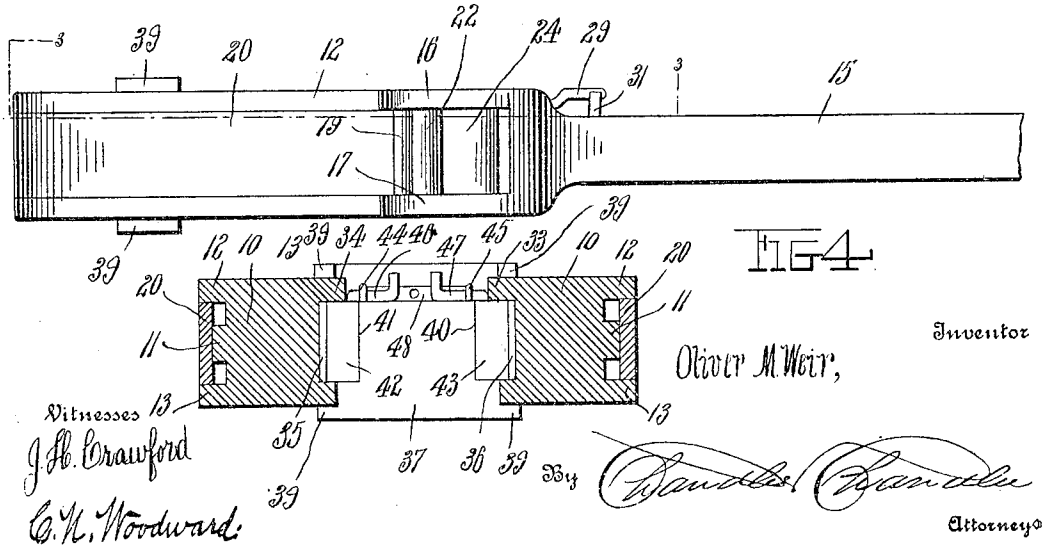


FIG. 4.

Witnesses

J. H. Crawford

C. M. Woodward.

Inventor

Oliver M. Weir,

By Dewey & Dewey

Attorneys

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

OLIVER M. WEIR, OF LAUREL, INDIANA.

RATCHET-WRENCH.

No. 927,618. Specification of Letters Patent. Patented July 13, 1909.

Application filed May 22, 1908. Serial No. 434,343.

To all whom it may concern:

Be it known that I, OLIVER M. WEIR, a citizen of the United States, residing at Laurel, in the county of Franklin, State of Indiana, have invented certain new and useful Improvements in Ratchet-Wrenches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to ratchet wrenches, and has for one of its objects to improve and simplify the construction and increase the efficiency of devices of this construction.

Another object of the invention is to provide a simply constructed device of this character comprising a head having a nut receiving cavity and a reversible operating handle, so that the wrench may be applied for right and left handed nuts or for turning nuts upon or off of bolts as required, and without removing the wrench from the nut.

Another object of the invention is to provide a simply constructed device of this character wherein the nut receiving cavity may be adjusted to fit nuts of various sizes.

With these and other objects in view the invention consists in certain novel features of construction as hereafter shown and described and specifically pointed out in the claims, and in the drawings illustrating the preferred embodiment of the invention, Figure 1 is a plan view of the improved wrench. Fig. 2 is a side elevation of the same. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 is a section on the line 4—4 of Fig. 1.

The improved device comprises a circular head 10 having spaced teeth 11 in its outer face, the teeth having their sides radially of the head or what is known as square teeth. The periphery of the head is also formed with spaced annular flanges 12—13, and bearing against the teeth 11 between these flanges at one point is a concaved portion 14 of a handle 15, the concaved portion having a transverse cavity formed by spaced side portions 16—17, the spaced sides being connected at opposite sides of the center by pins 18—19.

Surrounding the head 10 between the flanges 12—13 is a resilient strap 20 having barbed ends 21—22 adapted to be engaged with the pins 18—19 as shown, the strap member thus forming a means for coupling the handle 15 to the head and permitting the handle to be rotated around the head, while at the same time readily detachable therefrom by disconnecting the barbed ends of the resilient member from the pins, as will be obvious.

A pawl having two points 23—24 is swingingly mounted within the space between the sides 16—17 by a pivot pin 25, the two points of the pawl adapted to be alternately engaged with the teeth 11, and thus permit the handle 15 to be rotatively coupled to the head and reversed in position thereon, so that the head may be positively rotated by the handle from either direction, the object to be hereafter fully explained.

Swinging upon the pivot 25 between the pawl 23—24 and the side 17 of the handle is a shipper member 26 having depending ends 27—28 engaging the inner face of the pawl and with the rear portion extended into a handle 29 and projecting through a cavity 30 in the handle, the projection 29 being sufficiently resilient to enable it to be engaged with opposite sides of a stop 31. By this arrangement it will be obvious that when the handle member 29 is disposed at one side of the stop 31, the end 23 of the pawl will be engaged with the teeth 11, and when the resilient portion 29 of the shipper member is disposed at the opposite side of the stop 31, the point 24 of the pawl will be engaged with the teeth 11. By this means it will be obvious that the pawl may be readily reversed as required.

Formed through the head 10 is an elongated aperture 32 with guide-ways 33—34 in its sides, the bottoms of the guide-ways provided respectively with spaced teeth 35—36. Slidably disposed in the aperture 32 is a jaw member 37, the member 37 being the movable jaw of the wrench, while the rear end 38 of the aperture 32 forms the stationary jaw of the wrench. The movable jaw 37 is formed with overhanging lips 39 bearing over the opposite faces of the head 10. The portions of the jaw 37 opposite the guide-ways 33—34 are formed with reversely inclined faces 40—41, and bearing against these inclined faces are locking blocks 42—43, the outer faces of the blocks having teeth corresponding with and adapted to engage the teeth 35—36 respectively, as shown. The movable jaw member

37 is formed with a cavity in one face, and mounted upon the jaw within this cavity are spaced guide-members 44—45 through which rods 46—47 pass and upturned at their outer ends and fitting in cavities in the blocks 42—43. Connected to the jaw member 37 is a spring 48 operating against the rods 46—47, and yieldably maintaining the rods in position to hold the blocks 42—43 pressed toward their inner ends and yieldably in engagement with the teeth 35—36 of the guide-ways. By this arrangement it will be obvious that pressure applied against the inner faces of the movable jaw 37 will cause the inclined faces 40—41 to press the blocks 42—43 with their teeth firmly against the teeth 35—36 of the guide-ways and thus lock the movable jaw 37 firmly in position between the guide-ways. When the jaw 37 is to be adjusted, the upturned inner ends of the rods 46—47 are pressed toward the body of the jaw or against the spring 48 which will release the blocks 42 and move them along the inclined faces 35 and disconnect them from the teeth 35—36 so that the movable jaw member 37 may be manually adjusted to any desired extent upon the guide-ways 33—34. Thus the movable jaw may be adjusted to fit any size of nut required within the range of the aperture 32 and the guide-ways 33—34.

When it is desired to set a nut at "home" upon a bolt, the movable jaw 37 is adjusted as above described to fit the nut and the yieldable shipper arm adjusted to engage the end 24 of the double pawl with the teeth 11 of the head and the handle 15 moved to the left as far as is convenient for the operator and then returned to its original position, which action will not affect the head 10 as the pawl end 24 will simply click over the teeth 11, but at the next stroke of the handle the rotating operation will be repeated, and so on step by step until the nut is sufficiently "set".

When it is desired to release the nut, the shifter member 29 is reversed in position which will connect the pawl end 23 with the teeth so that at the movement of the handle 15 to the right the nut will be rotated backwardly upon the bolt and released.

If the device is to be employed upon left handed nuts it will be obvious that the operation will be simply reversed.

The guide-ways 33—34 at one side of the head 10 project a greater distance into the recess 32 than the guide-ways at the opposite side for a portion of their lengths, so that recesses 49—50 are formed opening into aperture 32, and the overhanging lips 39 of the movable jaw at the side in which the recesses 49—50 are formed are shorter than the overhangs at the other side, so that when the movable jaw is disposed opposite the recesses, the movable jaw can be detached from the head, as will be obvious.

The device is simple in construction, and is operative wherever a ratchet wrench is required.

What is claimed, is:—

1. A wrench comprising a head having a nut receiving cavity and with peripheral teeth, a handle having a concave face at one end rotatively engaging said head and provided with spaced pins, a resilient band bearing around said head, and having lateral projections at its ends yieldably engaging said pins, and a pawl carried by said handle and engaging said teeth.

2. A wrench comprising a head having a nut receiving cavity provided with confronting guide-ways formed with spaced teeth, a jaw movable in said guide-ways and with reversely inclined faces, blocks each inclined at one side and bearing against the inclined faces of the jaw and with the other sides provided with teeth engaging the teeth of the guide-ways, means carried by said movable jaw for releasing said blocks, a handle, and means for coupling said handle to said head.

3. A wrench comprising a head having a nut receiving cavity provided with confronting guide-ways formed with spaced teeth, a jaw movable in said guide-ways and with reversely inclined faces, blocks each inclined at one side and bearing against the inclined faces of the jaw and with the other sides provided with teeth engaging the teeth of the guide-ways, rods swinging upon said movable jaw and coupled respectively to said blocks, whereby the blocks are released, a handle, and means for coupling said handle to said head.

4. A wrench comprising a head having peripheral teeth and with a nut receiving cavity provided with confronting guide-ways formed with spaced teeth, a jaw movable in said guide-ways and with reversely inclined faces, blocks each inclined at one side and bearing against the inclined faces of the jaw and with the other sides provided with teeth engaging the teeth of the guide-ways, means carried by said movable jaw for releasing said blocks, a handle having a concave face at one end rotatively engaging said head and provided with spaced pins, a resilient band bearing around said head, means for detachably connecting the terminals of said band to said pins, and a pawl carried by said handle and engaging said teeth.

In testimony whereof, I affix my signature, in presence of two witnesses.

OLIVER M. WEIR.

Witnesses:
PEARL BRIDGFORD,
HARRY WARD.