

Dec. 28, 1937.

T. O. RUEB

2,103,556

RATCHET WRENCH

Filed March 13, 1936

Fig. 1.

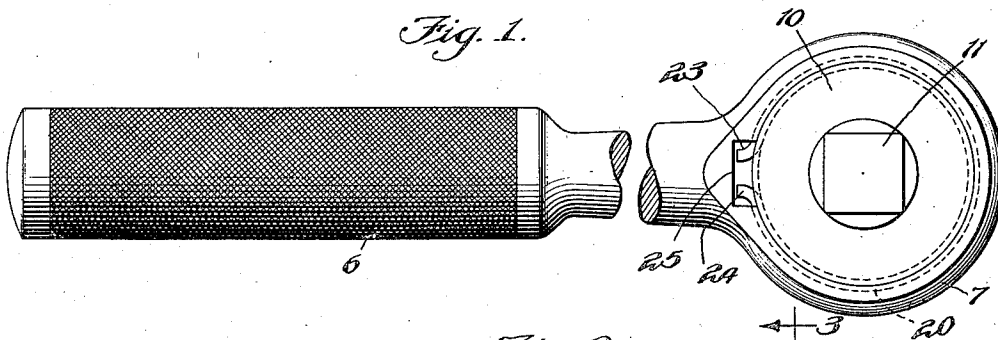


Fig. 2.

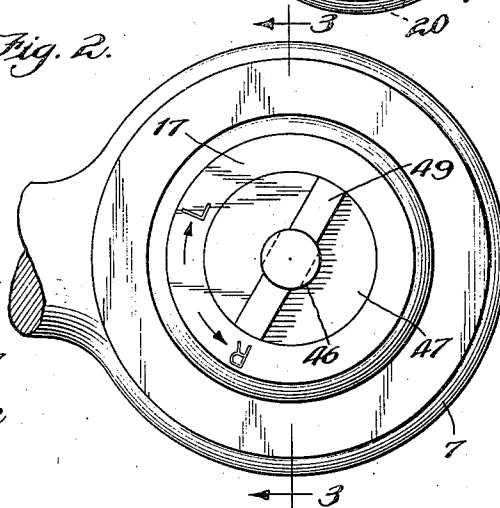


Fig. 4.

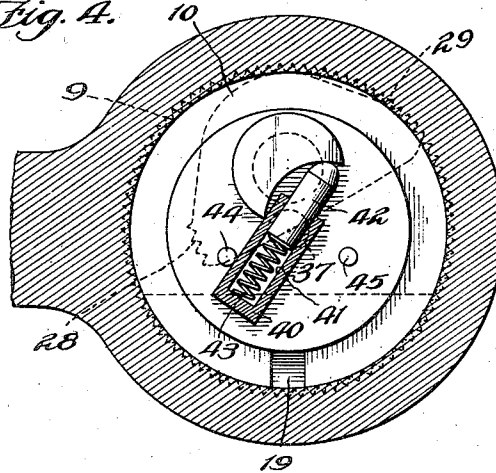


Fig. 3.

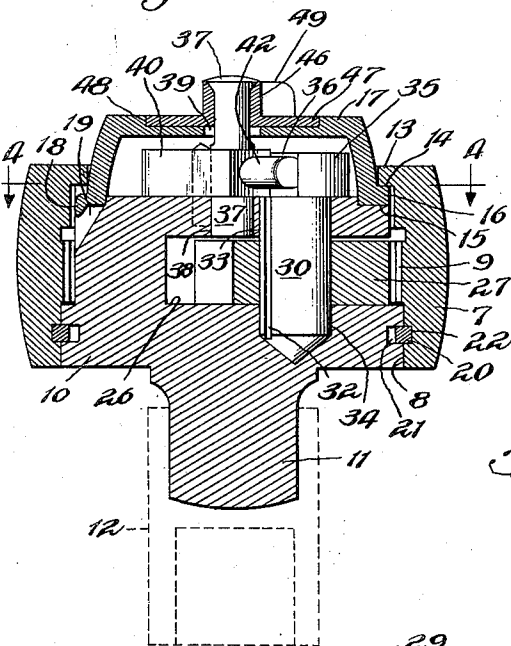
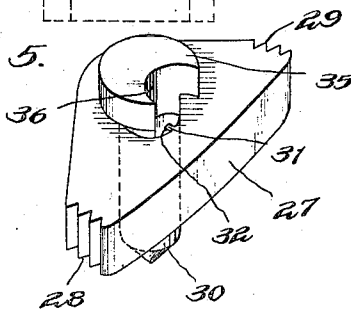


Fig. 5.



INVENTOR.

Theodore O. Rueb

BY

Glenn S. Noble

ATTORNEY.

UNITED STATES PATENT OFFICE

2,103,556

RATCHET WRENCH

Theodore O. Rueb, Chicago, Ill., assignor to The
Sherman-Klove Company, Chicago, Ill., a cor-
poration of Delaware

Application March 13, 1936, Serial No. 68,653

4 Claims. (Cl. 81—63)

This invention relates to ratchet wrenches, particularly of the reversible type, and is directed with novel means for effecting the reversing movement of the pawl or driving member.

In using wrenches of this type the user often finds it necessary to push on the head to hold the socket in engagement with the nut or bolt and in certain types of wrenches of this kind the engagement of the hand with the head tends to actuate the reversing mechanism as the wrench is being turned so that the turning head becomes loosened or tends to operate in the wrong direction as the handle is vibrated.

One of the principal objects of the present invention is to provide means whereby the operator may press against the head with little or no tendency toward operating the reversing mechanism.

Another object of the present invention is to provide means for fastening the parts together, which means may be readily manipulated for disassembling the parts.

Other objects and advantages will appear more fully from the following description taken in connection with the accompanying drawing in which

Figure 1 is a plan view;

Figure 2 is an enlarged view of the turning mechanism shown from the opposite side of Figure 1;

Figure 3 is a sectional view taken on the line 3—3 of Figure 2;

Figure 4 is a sectional view taken on the line 4—4 of Figure 3; and

Figure 5 is an enlarged perspective detail of the pawl and supporting part therefor.

As shown in the drawing, the handle 6 is provided with a socket or barrel 7 which may be formed integrally therewith or welded or attached thereto in any suitable manner. The socket or cylinder 7 has a longitudinal bore 8 and is provided with an annular series of teeth or corrugations 9. A turning member or head 10 is rotatively mounted in the barrel and is provided with any suitable means for connecting the same with the article to be turned such as a projection 11 of the type commonly used for turning sockets as indicated at 12. The barrel or cylinder 7 has an inwardly extending flange 13 at one end which provides an inner shoulder 14.

The turning head 10 is somewhat shorter than the barrel and has a peripheral groove or seat 15 at its inner end which is engaged by the flanged periphery or edge 16 of a cap or cup 17, said flanged end fitting under and against the

shoulder 14 and serving to hold the head 10

against movement in one direction in the cylinder 7. In order to prevent relative rotative movement between the cap or cup 17 and the head 10 the cap is provided with a tooth or projection 18 which engages with a notch or recess 19 in the end of the head 10 as shown in Figures 3 and 4.

The head, cap, and other parts are fastened in position in the barrel by means of a spring ring 20 which engages with peripheral grooves 21 and 22 in the head and barrel or cylinder respectively when the parts are in assembled position. However, in order to disassemble the parts or remove the cylinder from the head, the ends of the ring are turned outwardly to provide fingers or tangs 23 and 24 which engage with a recess 25 in the barrel 7, which recess extends outwardly so that the ends of suitable pliers may be inserted in the recess and engaged with said tangs in order to compress or retract the spring from its holding position into the slot 21. This slot is of course of sufficient depth to permit the ring to be drawn out of engagement with the slot 22 and the head may then be withdrawn from the cylinder.

The head 10 has a transverse channel or recess 26 in which is mounted a pawl 27 of approximately triangular shape with ratchet teeth 28 and 29 at the opposite ends or apexes which are adapted to coast with the teeth 9 to provide the ratchet turning movement. The pawl 27 is mounted on a pin 30 and has a spline or key 31 which fits in a key-way 32 in the pin so that the parts will turn together. The pin 30 engages with holes or bearings 33 and 34 in the head 10 and is free to turn therein as shown in Figure 3. The pin 30 has a head or enlarged upper end 35 which rests on the upper surface of the head 10 and which has a lateral cut or crescent shaped groove 36 in one side thereof.

The actuating mechanism for turning the pin 30 comprises a small stub shaft or rock shaft 37 which engages with a bearing 38 in the upper end of the head 10 and which extends upwardly through a hole 39 in the cap 17. A block 40 is carried by or formed integrally with the pin 37 and extends laterally with respect thereto. This block has a longitudinal bore 41 for receiving a plunger 42 which is preferably curved at its outer end to engage with the curved wall 36 in the head 35 of the pin 30. The plunger is urged outwardly by means of a spring 43 which is interposed at the inner end of the same and the bottom of the bore 41 as shown in Figure 5. Two stops 44 and 45 are provided in the upper end of the head 10 adjacent to the block 40 to limit the turning movement thereof. The upper

end of the pin 37 fits in a tubular boss or projection 46 on a disc 47 which engages with an annular recess 48 in the cap 17 and is adapted to turn freely therein. The disc and boss have thumb pieces 49 for turning the same. The portion of the pin 37 which engages with the boss 46 is preferably flattened and the end of the pin is riveted over after the parts have been assembled to hold the same in assembled position as will be understood particularly from Figure 3.

The operation of the wrench will be readily understood from the above description. If the thumb piece 49 is turned in a clockwise direction as shown in Figure 4, the spring plunger acting upon the head 35 will swing it to cause the teeth 28 to engage with the teeth 9. If it is desired to reverse the movement of the head with respect to the movement of the handle, the thumb piece 49 is turned in the opposite direction or until the block 40 engages with the stop or abutment 45 and the spring plunger will swing the head 35 and pawl connected therewith to its opposite engaging position. It will of course be understood that the tension of the spring is sufficient to cause the teeth of the pawl to engage with the teeth of the head during the operation of the wrench and the abutments 44 and 45 hold the block in proper position for such operation.

While I have shown a commercial form of my invention which is adapted for general use, it may be noted that changes may be made in the details of construction or arrangement of the parts without departing from the scope of the invention as set forth in the following claims, in which I claim:

1. In a ratchet wrench, the combination of a barrel having annular teeth therein and having an inwardly extending peripheral flange at one end, a turning head mounted in the barrel, a removable cap for covering and protecting the operating parts in the barrel and having an outwardly extending flange interposed between the head and the flange of the barrel, the flange on the cap being of less diameter than the bore of the barrel whereby it may be inserted and removed through the bore, means for rotatably holding the head in the barrel, means for fastening the cap to the head whereby they will rotate together, a reversible pawl mounted in the head and coacting with said teeth, means for reversing the position of the pawl, and manually operable means mounted on the cap exteriorly thereof and connected with said reversing means for actuating said reversing means.

2. In a ratchet wrench, a head having means

for engagement with a nut or the like and having a transverse opening therein, a pin extending through said opening, a double ended pawl mounted on said pin, a handle having a cylinder engaging with said head and having internal teeth which are engaged by the pawl, a head on said pin having a crescent shaped recess therein, a block pivotally mounted on the first named head and having a longitudinal bore, a spring pressed plunger mounted in said bore and engaging with the recess in the head of the pin and serving to turn the pin and pawl, stops for said block, a cap mounted in the cylinder and enclosing the block and coacting parts, a disc engaging with an annular recess in said cap, and a thumb piece on the disc engaging with the pivot for said block for turning the same.

3. In a ratchet wrench, the combination of a barrel having inwardly projecting teeth therein, a head rotatably mounted in the barrel, a pawl mounted in the head and having oppositely disposed engaging portions for engagement with the teeth whereby the head may be turned in opposite directions, a pin mounted in the head and secured to said pawl and having a recess in one side thereof, a cap fixed to said head and extending outwardly from the barrel, a pin engaging with bearings in said cap and in the head and having a transverse block with a longitudinal bore, a plunger slidably mounted in the bore and engaging with the recess in the first named pin, a spring tending to press the plunger outwardly, a disc mounted in the cap and secured to the last named pin, and means on the disc for turning the same.

4. In a ratchet wrench, the combination of a cylinder having annular teeth therein and having an inwardly extending peripheral projection at one end providing a shoulder at the end of the bore of the cylinder, a turning head rotatably mounted in the cylinder, means for detachably holding the turning head in operative position in the cylinder, a detachable cap for protecting the parts in the cylinder and having a peripheral portion interposed between the head and the projection on the cylinder, a projection on said cap engaging with a recess in the head to cause them to turn together, a double pawl swingingly mounted in the head, means for swinging the pawl and holding it yieldingly in engagement with the teeth, and manually operable means positioned on the cap exteriorly thereof and operatively connected with the swinging means for actuating the same.

THEODORE O. RUEB.