J. O. SHELBURNE.

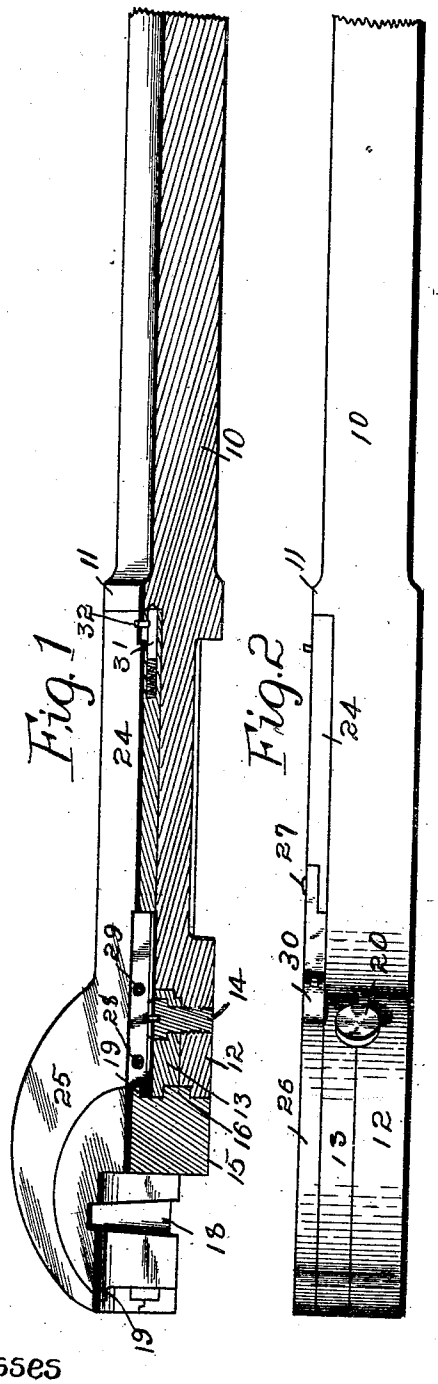
RATCHET WRENCH.

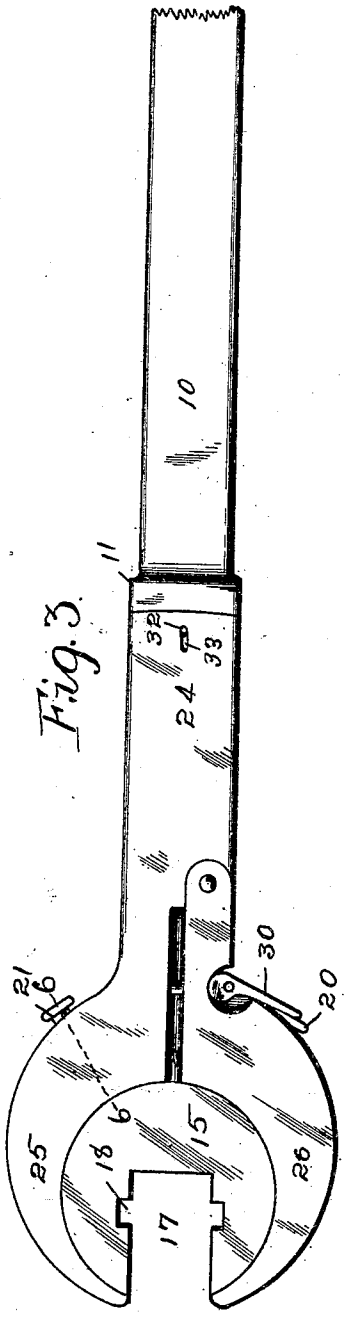
APPLICATION FILED MAY 22, 1908.

921,290.

Patented May 11, 1909.

2 SHEETS—SHEET 1.





Witnesses

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2 SHEETS—SHEET 2.

Fig. 8

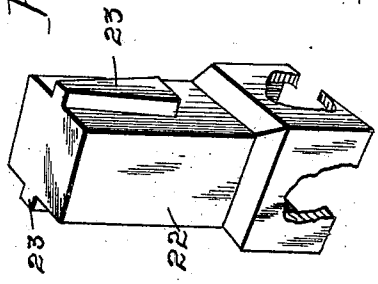


Fig. 9.

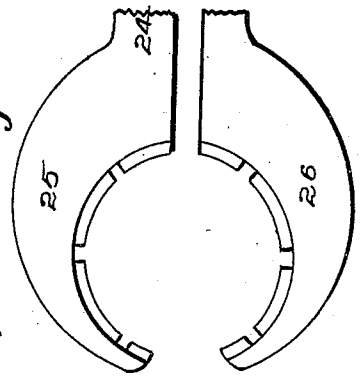


Fig. 7



Fig. 5.

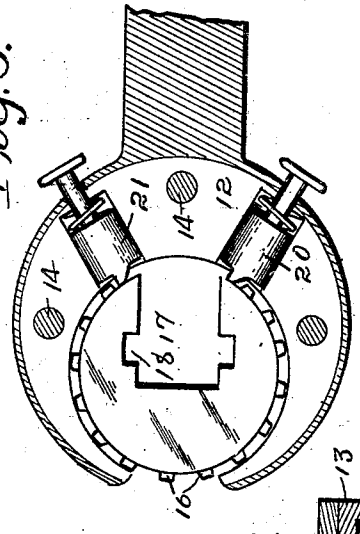


Fig. 4.

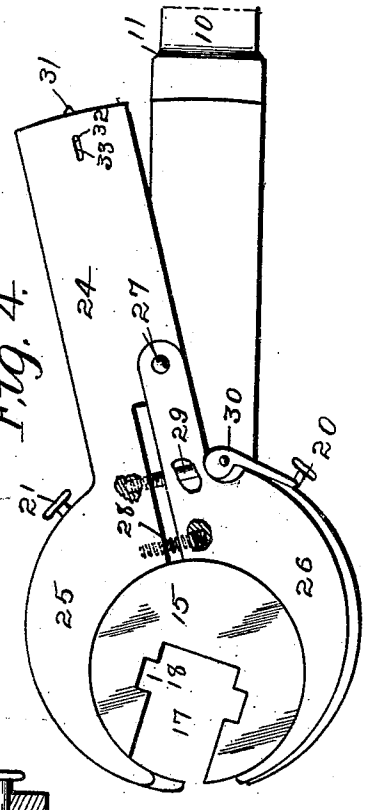
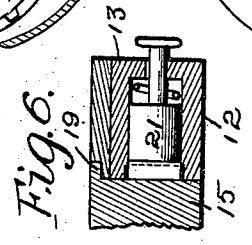


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES OLIVER SHELBURNE, OF TOLEDO, OHIO, ASSIGNOR TO ROY C. BURTON AND CHARLES J. IRISH, OF KELLOGG, IOWA.

RATCHET-WRENCH.

No. 921,290. Specification of Letters Patent. Patented May 11, 1909.

Application filed May 22, 1908. Serial No. 434,293.

To all whom it may concern:

Be it known that I, JAMES OLIVER SHELBURNE, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented a new and useful Ratchet-Wrench, of which the following is a specification.

The object of my invention is to provide a ratchet wrench of simple, durable and inexpensive construction, in which the rotary nut engaging member is open at one edge, so that a nut may be inserted in it, either from the side or from the edge, to suit the requirements of the operator, and further to provide a wrench of this kind in which the ratchets may be quickly and easily reversed so that the rotary nut engaging member may be made to turn in either direction, and also so that the rotary nut engaging member may be firmly locked.

A further object is to provide an auxiliary handle designed to yieldingly engage the rotary nut engaging member, in such a manner that the operator may by grasping the auxiliary handle, hold the nut engaging member firmly enough to prevent it from moving backwardly against the action of the ratchet dogs, so that the rotary nut engaging member will be moved in one direction by the ratchet dogs, but will be held against return movement by the auxiliary handle, when the main handle is returned.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which—

Figure 1 shows a central longitudinal sectional view in perspective, of the complete device embodying my invention. Fig. 2 shows a side elevation of same. Fig. 3 shows a top or plan view of same. Fig. 4 shows a top or plan view of the same, with a portion of the main handle removed, and the auxiliary handle in position out of alinement with the main handle. Fig. 5 shows a sectional view of the wrench head. Fig. 6 shows a detail sectional view on the line 6—6 of Fig. 3. Fig. 7 shows a detail view illustrating the bolt for connecting the parts of the auxiliary handle. Fig. 8 shows a detail perspective view of a nut engaging device, designed to be detachably connected with the nut engaging member of the wrench, and Fig. 9 shows a top view of the head of the auxiliary handle.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate the main handle. At its top, near its central portion, is a lug 11 formed with a notch at one side for purposes hereinafter made clear. A circular head 12 is formed integral with the handle, and is open at its outer portion. This circular head has an annular recess or chamber formed therein. I also provide a detachable plate 13 forming part of the head 12, and of substantially the same shape as the main portion of the head. Between the parts 12 and 13 is an annular groove designed to receive ratchet teeth on the rotary nut engaging member hereinafter described. Screws 14 are provided for detachably connecting the parts 12 and 13. The nut engaging member comprises a body portion 15, circular in outline, and provided on its periphery with a series of ratchet teeth 16, designed to enter the annular groove between the parts 12 and 13. This nut engaging member is provided with an annular opening 17 therein, in one position capable of standing in alinement with the opening at the outer ends of the parts 12 and 13, as clearly shown in Figs. 1 and 3.

In the sides of the nut engaging member adjacent to the opening 17, I have formed the tapered grooves 18, for purposes hereinafter made clear. At the top of the part 15 is an annular rib 19 for purposes hereinafter made clear.

Mounted in the sides of the head portion adjacent to the handle portion, are two spring actuated pawls 20 and 21, each having a handle projecting through the head. These pawls normally engage the ratchet teeth 16, and they are so arranged that by grasping the handles thereof, they may be turned a half revolution. When said pawls are both in the position shown in Fig. 5, it is obvious that when the handle is turned in one direction, the nut engaging member will be turned with it, and when the handle is turned in the opposite direction, the ratchets will slide over the ratchet teeth and permit the nut engaging member to be held stationary. If the position of the ratchets is reversed, then when the handle is moved in the direction

first described above, the ratchets will slide over the ratchet teeth and when moved in the opposite direction, they will turn the nut engaging member in the same direction. Furthermore, if the ratchets are placed in opposite positions, then the nut engaging member will be locked to the handle.

In some instances, a nut cannot conveniently be inserted in the nut engaging member, and I have provided a nut engaging device shown in Fig. 8, and comprising an angular body portion 22 designed to enter the opening 17 and provided with tapered ribs 23, at its sides, designed to enter the tapered grooves 18. One end of the body portion 22 is provided with an angular recess designed to receive a nut. Obviously, a nut engaging device of this kind may be quickly and easily attached, and a number of them may be provided to fit nuts of different sizes.

In experimenting with ratchet wrenches, I have found that in some instances, when the wrench is placed in engagement with a nut, which nut turns comparatively easy on the bolt on which it is placed, the operator may move the handle backwardly and forwardly, and the ratchets will engage the ratchet teeth in such a manner as to cause the nut engaging device, together with the nut, to move backwardly and forwardly with the handle, so that the nut is not turned.

In many instances, it is impracticable for the operator to hold the nut engaging device in such a manner as to prevent it from moving forwardly and backwardly with the handle, and for this purpose, I have provided an auxiliary handle consisting of a handle portion 24 having an integral head portion 25 and a mating head portion 26 pivoted at 27 to the handle 24.

The parts 25 and 26 are provided with an annular rim 19. In this way, the auxiliary handle is pivotally connected with the nut engaging member and prevented from moving away from the wrench head. The parts 25 and 26 are yieldingly held apart so that they will not apply any great amount of friction to the nut engaging member, by means of a spring 28.

For clamping the parts 25 and 26 together, I have provided a bolt 29 slidingly mounted in the part 26, and seated in the part 25. The head of the bolt projects through the part 26, and pivoted to it is a cam lever 30. When the cam lever is in one position, the parts 25 and 26 may be slightly separated sufficiently to permit the nut engaging member to freely rotate therein, and when the cam lever 30 is in another position, the part 26 is forced against the part 25 with sufficient force to hold the nut engaging member against rotation relative to the parts 25 and 26, except when a considerable amount of power is applied to the nut engaging member, tending to rotate it.

In order to vary the amount of pressure between the parts 25 and 26, the bolt 29 may be turned to apply greater or less pressure between the parts 25 and 26, when the cam lever is in the position shown in Fig. 4. On the outer end of the auxiliary handle 24 is a spring actuated slide bolt 31 having a pin 32 connected therewith, and projected through a slot 33. Said bolt is designed to engage the notch in the lug 11 and thus hold the auxiliary handle to position in line with the main handle.

In practical use, and assuming that the nut engaging member is in the position shown in Fig. 3, then obviously it may be applied to a nut either by admitting the nut through the edge of the wrench head, or through either side of the nut engaging member, then by reciprocating the main handle, the ratchets will cause the nut engaging member to be turned in one direction.

By reversing the ratchet, the direction of rotation of the nut engaging member may be changed, or by placing the ratchets in opposite positions, the rotary nut engaging member may be locked to the handle.

In the event that a nut is mounted upon a bolt so loosely that when the main handle is reciprocated, the nut will move back and forth, then the operator operates the slide bolt 31 to release the auxiliary handle, and he then turns the auxiliary handle to position at an angle relative to the main handle, and he finally moves the cam lever 30 to the position shown in Fig. 4, so that the auxiliary handle device will apply considerable friction to the nut engaging member, then when the main handle is moved in one direction, the auxiliary handle is held stationary and when the main handle is returned to starting position, the auxiliary handle will engage the nut engaging member with sufficient friction to hold it stationary while the main handle is returning to starting position. Hence, the spring actuated ratchets may ride over the ratchet teeth on this return movement of the handle, and engage the nut engaging member at new places each time the main handle member is moved.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is—

1. In a device of the class described, the combination of a handle, a head connected therewith, a nut engaging member rotatably mounted in the head, a ratchet device interposed between the head and the nut engaging member, an auxiliary handle having a frictional engagement with the nut engaging member, and means for varying the amount of friction between the auxiliary handle and the nut engaging member.

2. A device of the class described, comprising a handle portion, a head connected with the handle, a rotary nut engaging por-

tion mounted in the head, and having ratchet teeth on its periphery, and two spring actuated ratchets mounted in the head, on opposite sides of the handle, said ratchets being capable of turning to thereby permit the nut engaging portion to be turned in different directions relative to the head, an auxiliary handle device formed of two parts pivotally connected, and designed to engage opposite sides of the nut engaging device, a screw passed through one of said parts, and seated in the other, and a cam lever connected with said screw.

3. A device of the class described comprising a handle portion, a head connected with the handle, a rotary nut engaging portion mounted in the head, and having ratchet teeth on its periphery, and two spring actuated ratchets mounted in the head, on opposite sides of the handle, said ratchets being capable of turning to thereby permit the nut engaging portion to be turned in different directions relative to the head, an auxiliary handle device, a screw passed through one of said parts, and seated in the other, a cam lever connected with said screw, and a spring interposed between said parts tending to force them away from each other.

4. A device of the class described comprising a handle portion, a head connected with the handle, a rotary nut engaging portion mounted in the head, and having ratchet teeth on its periphery, and two spring actuated ratchets mounted in the head on opposite sides of the handle, said ratchets being capable of turning to thereby permit the nut engaging portion to be turned in different directions relative to the head, an auxiliary handle device, a screw passed through one of said parts, and seated in the other, a cam lever connected with said screw, a spring interposed between said parts tending to force them away from each other, a spring actuated slide bolt on the auxiliary handle, and a notched lug on the main handle, to be engaged by the slide bolt.

Des Moines, Iowa, Jan. 27, 1908.

JAMES OLIVER SHELBURNE.

Witnesses:
CHAS. J. FORD,
MAUD B. CAMPBELL.