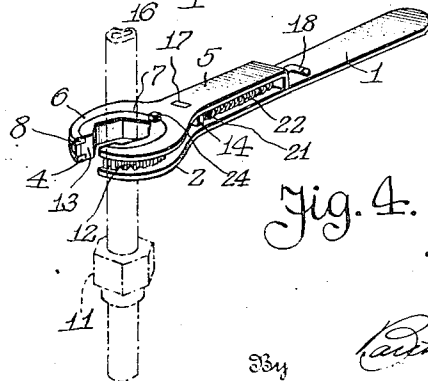
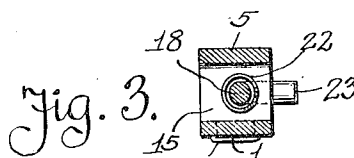
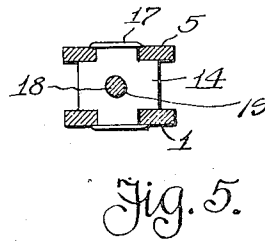
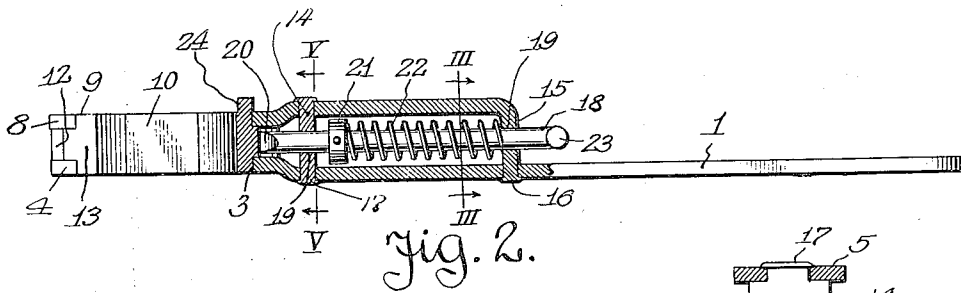
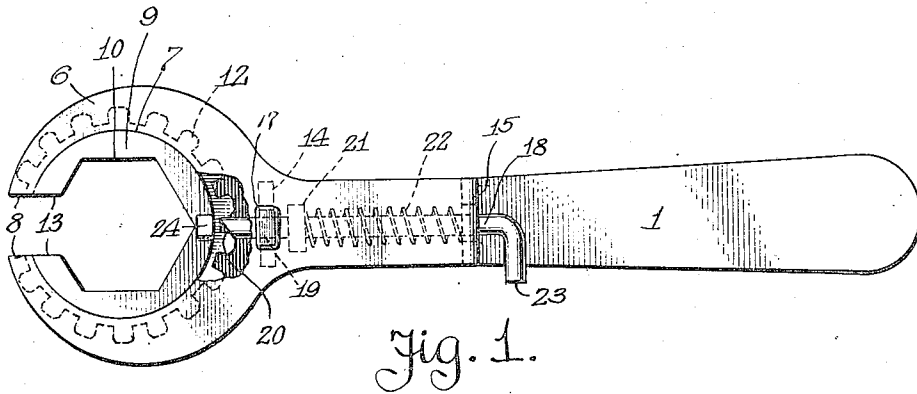


R. A. MILLEN.
 RATCHET WRENCH.
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Patented July 11, 1922.



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RATCHET WRENCH.

1,422,121.

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To all whom it may concern:

Be it known that I, RUDOLPH A. MILLEN, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Ratchet Wrenches, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to ratchet wrenches, and the primary object of my invention is to provide a reversible ratchet wrench that may be advantageously used for rotating or adjusting nuts or other bodies on which an ordinary wrench of the ratchet type could not be conveniently used. For instance, the ratchet wrench has been especially designed for rotating any nut or body having a wire, small pipe or other member connected there-
15 to which would prohibit the placing of the wrench down over the nut or body, and with this end in view, the wrench has a split or open outer end which will admit a wire, pipe or other small member to the central
20 portion of the wrench and permit of the wrench being placed down over a nut or other body to which the wire or pipe is connected.

Another object of my invention is to provide a pawl and ratchet wrench wherein the arrangement of the pawl is such that its operation may be reversed relative to a ratchet nut engaging member which is held so that it cannot become accidentally dis-
30 placed.

A further object of this invention is to provide a simple, durable and inexpensive wrench consisting of comparatively few parts that may be easily and quickly assembled, the wrench being constructed so that it will withstand rough usage and permit of a nut or body being easily and quickly adjusted.

The above and other objects are attained
45 by a mechanical construction that will be hereinafter specifically described and then claimed, and reference will now be had to the drawing, wherein—

Figure 1 is a plan of the wrench, partly
50 broken away;

Fig. 2 is a longitudinal sectional view of the wrench;

Fig. 3 is a cross sectional view taken on the line III—III of Fig. 2;

55 Fig. 4 is a perspective view of the wrench, illustrating an instance of its use, and

Fig. 5 is a cross sectional view taken on the line V—V of Fig. 2.

The wrench comprises a comparatively flat handle bar 1 having the outer end there-
60 of provided with a circular head 2 and this head is offset in a plane parallel with the plane of the handle bar 1, said circular head having a circular opening 3 and a slot 4 at the outer end thereof.

65 Connected to the outer end of the handle bar 1 is a side plate 5 having an offset circular head 6 provided with an opening 7 and a slot 8, said head and its opening and slot being in parallel registration with the head
70 2 of the handle bar 1, so that the walls of the openings 3 and 7 may pivotally support a nut or body engaging collar 9 having its inner wall provided with facets 10 so that it may engage the facets of a nut or other
75 body 11. The periphery of the collar 9 is provided with a toothed rib 12 which extends between the heads 2 and 6 and said collar and its rib has a slot 13 corresponding in width to the slots 4 and 8, thus pro-
80 viding an entrance opening into the nut engaging collar 9 from the outer end of the wrench.

Prior to connecting the side plate 5 to the handle bar 1, the nut engaging collar 9 is
85 placed in position, also a transverse partition or guide 14 which is located adjacent the heads 2 and 6. To retain the side plate 5 in position, said side plate has its inner end bent at an angle, as at 15, and provided with
90 a tongue or rivet 16 which extends into the handle bar 1 and is upset or peened, thereby fixing the inner end of the side plate 5 relative to the handle bar 1. The intermediate
95 portion of the side plate 5 is held in spaced relation to the handle bar 1 by the transverse partition or guide 14 and this partition is formed with tongues or rivets 17 extending
100 into openings provided therefor in the handle bar 1 and the side plate 5, the partition tongues or rivets being upset or peened, as clearly shown in Fig. 2, so that the partition 14 will cooperate with the angular
105 end 15 of the side plate 5 in retaining the side plate in spaced relation to the handle bar 1, and thus provide a housing adjacent the heads 2 and 6 of the wrench.

Slidable in the housing formed by the handle bar 1 and the side plate 5 is a longitudinally disposed pawl 18 extending
110 through openings 19 provided therefor in the partition 14 and the angular end 15 of

the side plate 5. The outer end of the pawl extends between the heads 2 and 6 of the wrench and terminates in a beveled tooth 20 constantly in engagement with the teeth of the toothed rib 12 of the collar 9.

On the pawl 18, between the partition 14 and the angular end 15 of the side plate 5 is an abutment 21 and encircling the pawl 18, between the abutment 21 and the angular end 15 of the side plate 5 is a coiled expansion spring 22, the expansive force of said spring maintaining the toothed outer end of the pawl normally in engagement with the ratchet collar 9. The inner end of the pawl 18 terminates in a crank or handle 23 and by manually retracting the pawl it may be turned a half revolution, thereby reversing the position of the tooth 20 relative to the ratchet or nut engaging collar 9. As shown in Fig. 1 the handle bar 1 may be moved in a clockwise direction with the tooth of the pawl receding over the teeth of the nut engaging collar, but when the handle bar 1 is moved in a counterclockwise direction then the nut engaging collar is carried with the heads of the wrench. This operation may be reversed by simply reversing the position of the pawl.

One face of the nut engaging collar 9 is provided with a lug 24 which is preferably located diametrically opposite the slot 13 in said collar and when the lug 24 aligns with the pawl 18, the operator of the wrench will know that the slot 13 of the nut engaging collar registers with the slots 4 and 8 in the heads 2 and 6 respectively of the wrench.

By reference to Fig. 5 it will be noted that the ratchet wrench can be used similar to a spanner or alligator wrench, that is, it can be placed down over the nut or body 11 even when other members are attached thereto, and with the wrench in engagement with such nut or body, it is only necessary to oscillate the same to rotate the nut or body. With the nut engaging collar 9 loose between the heads 2 and 6 of the wrench the collar may remain in engagement with the nut or body 11 while the heads 2 and 6 are oscillated to permit of the pawl obtaining fresh grips on the nut engaging collar, and it is in this manner that the split ratchet wrench can be used similar to an ordinary spanner

wrench without repositioning such wrench during the rotation of the nut or similar body.

I attach considerable importance to the simplicity of construction entering into the wrench, as the handle bar 1 and the side plate 5 may be cut and stamped from sheet metal and then bent to proper form. The parts of the wrench can be easily and quickly assembled and the pawl and spring are sufficiently protected within the housing to avoid being injured by rough usage.

One embodiment of my invention has been illustrated, but it is to be understood that the structural elements are susceptible to such variations and modifications as fall within the scope of the appended claim.

What I claim is:—

A ratchet wrench comprising a flat bar having a head at its outer end provided with a slot, a flat plate disposed in parallelism with the outer end of said bar and having a head with a slot therein, said plate having its inner end bent and anchored in said bar to form an end wall, a transverse partition between said bar and plate adjacent the heads thereof, tongues on said partitions extending into said bar and plate and anchored therein, a ratchet nut engaging collar journaled in said bar and plate heads with the ratchet portion of said collar extending between said heads, said collar having a slot adapted to register with the slots of said bar and plate heads, a pawl slidable and rotatable in said partition and the end wall of said plate and having its outer end normally engaging said ratchet nut engaging collar, an abutment on said pawl adjacent said partition, a spring encircling said pawl between said abutment and the end wall of said plate and holding said pawl in engagement with said ratchet nut engaging collar, and a crank on the inner end of said pawl for turning said pawl so that the action thereof relative to ratchet nut engaging collar may be reversed.

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

RUDOLPH A. MILLEN.

Witnesses:

KARL H. BUTLER,
ANNA M. DORR.