

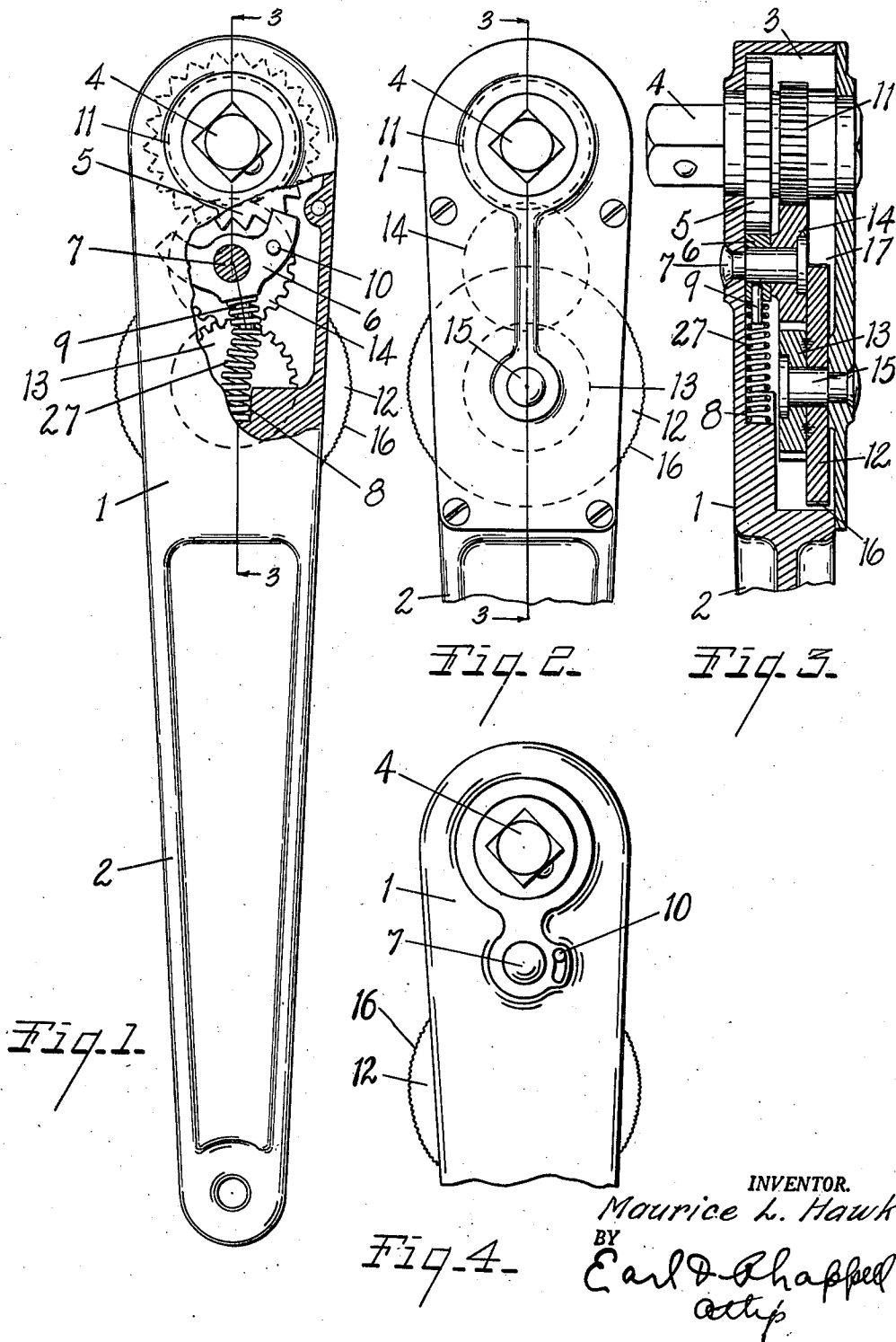
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RATCHET WRENCH

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RATCHET WRENCH

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1 Claim. (Cl. 81—57)

This invention relates to improvements in ratchet wrenches.

The main objects of this invention are:

First, to provide a ratchet wrench in which the nut or the bolt, whichever may be turned, may be quickly run up to position for tightening, or in removing, quickly removed after it is freed.

Second, to provide a ratchet wrench embodying these advantages which is simple and economical in structure and convenient to use.

Further objects relating to details and economies of my invention will appear from the description to follow. The invention is defined in the claim.

A structure embodying the features of my invention is illustrated in the accompanying drawing, wherein:

Fig. 1 is a plan view of a ratchet wrench embodying my invention partially in longitudinal section and partially broken away.

Fig. 2 is a fragmentary view of the reverse or rear side of the wrench.

Fig. 3 is a fragmentary view mainly in longitudinal section on line 3—3 of Figs. 1 and 2.

Fig. 4 is a top plan view, unbroken, of the upper portion of Fig. 1.

In ratchet wrenches the nut or bolt in tightening or loosening may loosen so freely that there is insufficient friction to cause the ratchet to operate, that is, as the wrench is oscillated the nut or bolt turns with it without permitting ratchet action of the wrench. In wrenches embodying my invention such conditions are effectively met, and further, the operations of placing or removing nuts or bolts or threaded members on which the wrench may be used are facilitated because the part to be rotated may be quickly run up to the point where leverage is required such as manipulation of the wrench handle.

In the embodiment of my invention illustrated the wrench body designated by the numeral 1 is extended to provide the integral handle 2. The body is provided with a chamber 3 to receive the operating parts. Spindle 4 is adapted to receive a wrench socket or other jaw member that is rotatably mounted in the wrench at the inner end thereof. This spindle is provided with a ratchet wheel 5 with which the reversible ratchet 6 coacts. This ratchet is mounted on the pivot pin 7 disposed at the inner side of the spindle 4, that is, toward the handle relative to the spindle. The ratchet pawl 6 is spring urged in either position by means of the coil spring 27 seated in a pocket or recess 8, its outer end engaging a pin 9 disposed laterally of pivot 7. The finger piece 10 projects through the side of the wrench body so as to permit manual reversing of the pawl, as

shown in Fig. 4. The spindle 4 is provided with a gear 11 which is connected to the hand-wheel 12 through a train of gears consisting of the gear 13 secured to the side of the hand-wheel and an intermediate gear 14. The hand-wheel 12 and the gear 13 are mounted on a pivot stud or spindle 15 common to both wheel and gear 13, which meshes with the gear 14, and the gear 14 is mounted on the pivot pin or stud 7 for the pawl 6. The hand-wheel 12 projects through slots 17 provided therefor on the opposite sides of the wrench body and is preferably peripherally knurled as indicated at 16 for convenience in manipulation. With the parts thus arranged the wrench jaw or socket may be engaged with the work and assuming that it turns freely the hand-wheel 12 may be manipulated as by the thumb of the operator to tighten the nut or bolt or to entirely remove it after it has been freed.

It is frequently found that nuts or bolts turn so freely that there is not sufficient friction to hold the spindle and manipulation of the wrench through its handle, that is swinging or oscillating movement merely results in rotating the nut in both directions. Under such conditions and also when nuts or bolts are being positioned for tightening the hand-wheel of my improved wrench may be manipulated very greatly expediting the work and meeting conditions such as pointed out which are very annoying as well as time consuming.

I have illustrated a simple and practical embodiment of my invention. I have not attempted to illustrate other embodiments or adaptations which I contemplate in adapting my improvements to certain other forms of ratchets as it is believed that this disclosure will enable those skilled in the art to embody or adapt my improvements as may be desired.

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

In a ratchet wrench, the combination of a chambered body provided with a handle, a rotatably mounted jaw spindle, a ratchet wheel operatively associated with said spindle, a coacting ratchet pawl, a gear on said spindle, a hand-wheel mounted within said body to project therefrom to be turned by the manual engagement thereof, and driving connections for said hand-wheel to said spindle gear comprising a gear connected to said hand-wheel for rotation therewith, an intermediate gear meshing with said hand-wheel gear and with said spindle gear, and a common pivot on which are mounted said ratchet pawl and said intermediate gear.

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