May 31, 1932 H. J. WELLMAN 1,860,914

RATCHET WRENCH

Filed Feb. 19, 1930 2 Sheets-Sheet 1

Fig. 1.

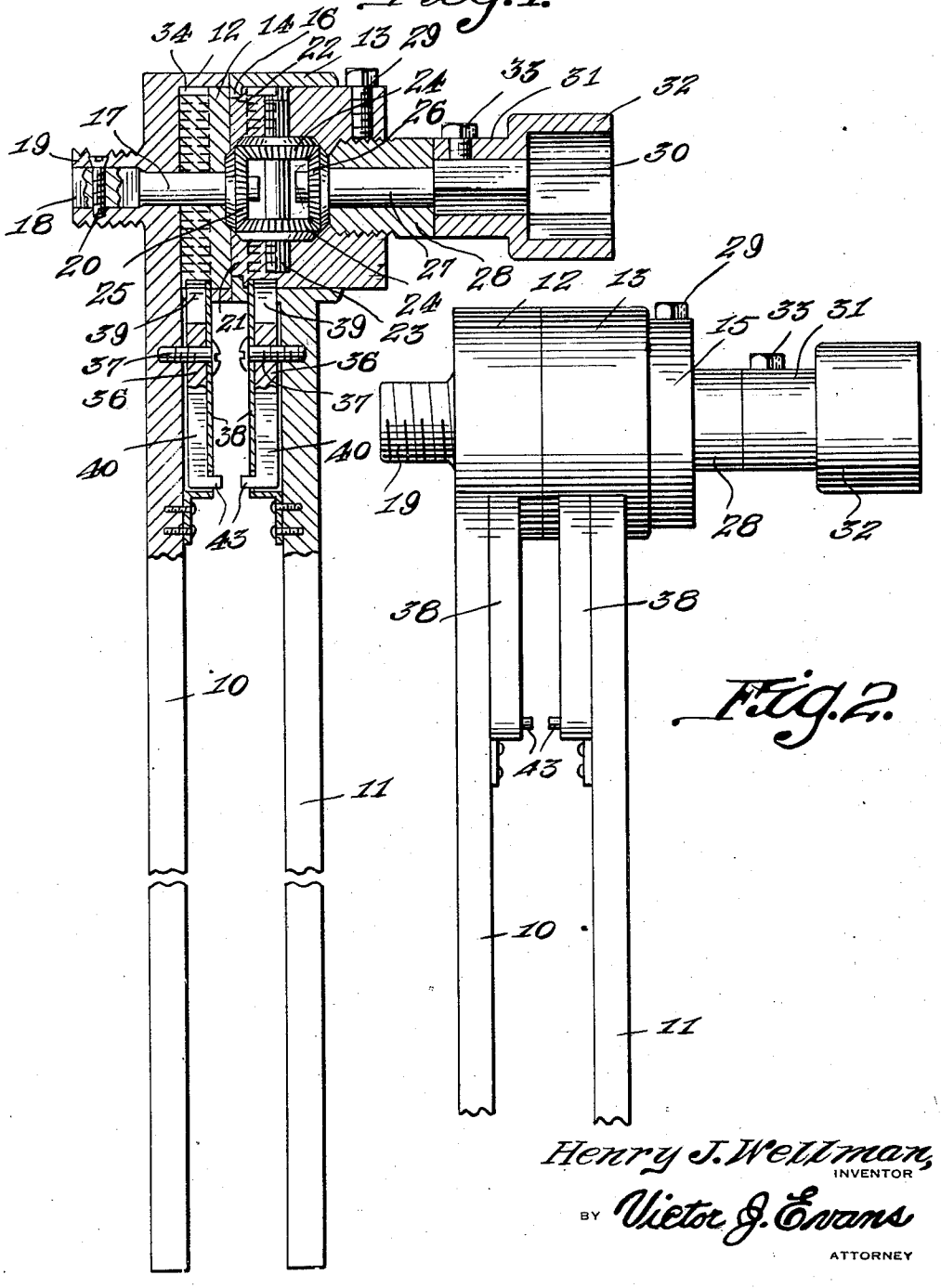


Fig. 2.

Henry J. Wellman,
INVENTOR

BY Victor J. Evans
ATTORNEY

May 31, 1932. H. J. WELLMAN 1,860,914

RATCHET WRENCH

Filed Feb. 19, 1930 2 Sheets-Sheet 2

Fig. 3.

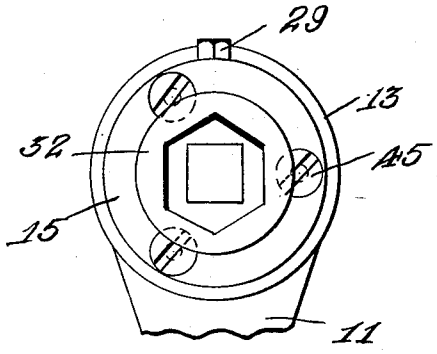
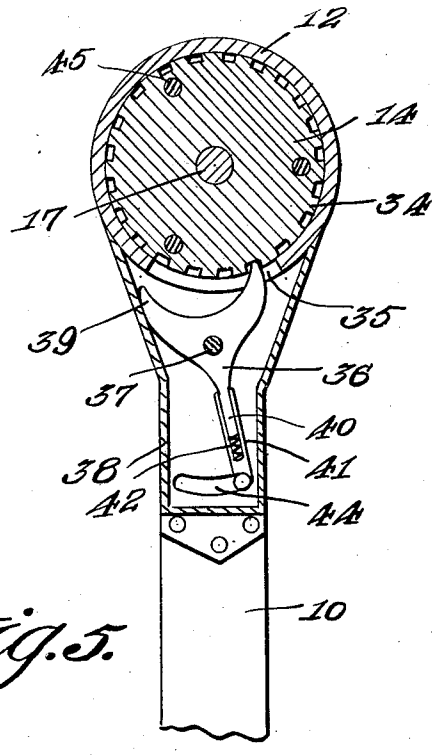


Fig. 4.



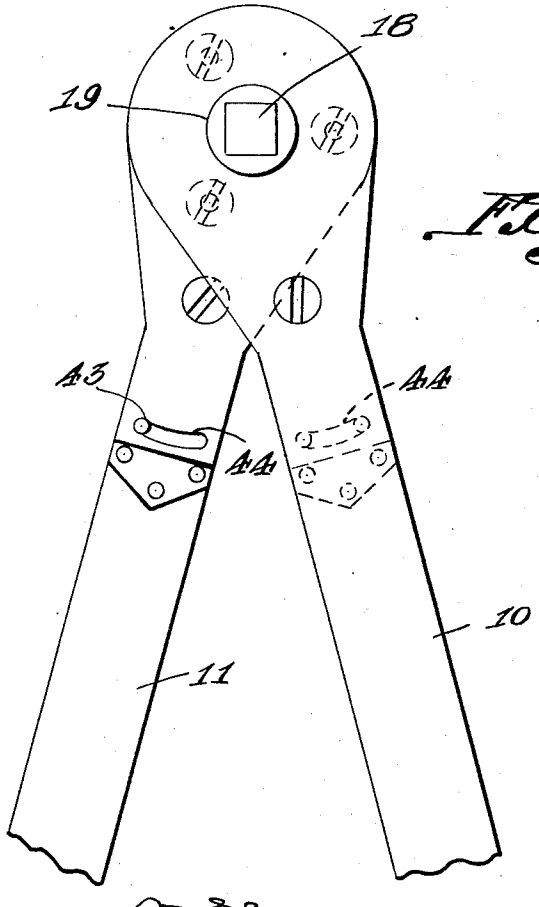
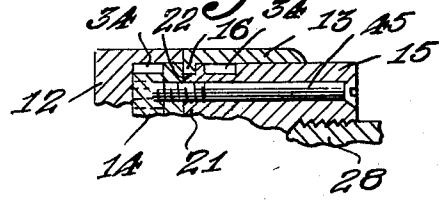


Fig. 5.

Fig. 6.



WITNESS

Henry J. Wellman,
INVENTOR

BY Victor J. Evans
ATTORNEY

Patented May 31, 1932 1,860,914

UNITED STATES PATENT OFFICE

HENRY J. WELLMAN, OF NOLAN, WEST VIRGINIA, ASSIGNOR OF ONE-HALF TO MABEL T. JOSEPH AND ONE-FOURTH TO WILLIAM E. GOOD, BOTH OF WILLIAMSON, WEST VIRGINIA

RATCHET WRENCH

Application filed February 19, 1930. Serial No. 429,713.

This invention relates to wrenches of the ratchet type embodying among other characteristics means whereby the nut engaging portion thereof will rotate continuously during the tightening of the nut.

Another object of the invention contemplates the provision and arrangement of means upon the wrench whereby the nut engaging portion may be operable in either direction for tightening or loosening.

An additional object of the invention consists of multiple handles for the wrench whereby the nut engaging portion and wrench assembly proper may be supported in position for use while the ratchet operation takes place.

More specifically stated the wrench is provided with pawl and ratchet connections for each of the handles whereby the latter may be actuated with equal effect when desiring a reversal of the direction of travel of the nut engaging portion or may be operated in unison where more power is required.

With the above and other objects in view, the invention further consists of the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings:—

Figure 1 is a side elevation of the present invention partly broken away to illustrate the construction thereof.

Figure 2 is a view similar to Figure 1 in full.

Figure 3 is a front elevation of the present invention.

Figure 4 is a horizontal sectional view taken therethrough.

Figure 5 is a rear elevation of the invention.

Figure 6 is a detail sectional view taken through a portion of the invention and illustrative of the connection taking place between certain of the parts thereof.

Referring to the drawings in detail wherein like characters of reference denote corresponding parts, the reference characters 10 and 11 indicate the multiple handles, the former having a cup-shaped housing 12 upon one end whereas the handle member 11 terminates to provide a sleeve section 13. Ratchet members 14 and 15 respectively are revolvably mounted within the cup-shaped housing member 12 and the sleeve section 13. The side edge or innermost periphery of the sleeve section 13 is provided with an inwardly projecting annular flange 16 designed for abutting engagement with the adjacent peripheral edge of the cup-shaped housing member 12 whereby a bearing surface will be provided for the cup-shaped housing member upon the sleeve member 13 and the accumulation of grit and other extraneous matter upon the ratchet members will be prevented.

The shaft member 17, projecting horizontally and centrally through the cup-shaped housing member 12 and ratchet member 14 provides the axis upon which the ratchet member 14 is designed for rotation. The outermost end of the shaft is squared, as at 18, and projected within a correspondingly shaped bore in an extended sleeve 19 fast upon the outer portion of the housing member 12. A pin member or other fastening, such as indicated at 20, is passed through the walls of the sleeve 19 and immediate portion of the squared end 18 of the shaft 17 whereby accidental displacement of the latter will be prevented.

As shown in Figures 1 and 6 of the drawings, the ratchet member 15 is provided with a recess 22 upon the innermost side and marginal edge thereof to accommodate the flange 16.

The ratchet member 15 is cut away to provide a compartment designed for the accommodation of a form of driving mechanism.

Such mechanism comprises a shaft member 23 receivable within pocket portions in the ratchet member 15 beyond the aforementioned compartment. Idler beveled gears 24 are journaled upon that portion of the shaft 23 disposed within the compartment. A driving gear 25 fixedly mounted upon the innermost projecting end of the shaft 17 is meshingly engaged with both of the gears 24. A driven gear 26 meshingly engaged with the idler gears 24 after the manner of the

driving gear 25, is fixed upon the innermost projecting end of a shaft 27 journaled within a bushing 28; the latter being designed for simultaneous movement with the ratchet member 15 through the employment of a set screw 29. The outermost projecting end of the shaft 27 is squared, as at 30, to accommodate the innermost correspondingly shaped sleeve portion 31 of a socket or other wrench 32. A set screw 33, carried by the attaching sleeve 31 is designed for biting engagement with the squared portion 30 of the shaft 27. The outer sides of the ratchet members 14 and 15 are provided with radially projecting ratchet teeth 34 exposed through openings 35 in the cup-shaped housing member 12 and the sleeve 13.

Pawls or dogs, such as indicated at 36, pivotally mounted for lateral swinging movement, as at 37, upon each of the handle members 10 and 11 and within boxings 38, are provided with multiple ends 39 designed for selective engagement with the teeth 34 of the ratchets. Extensions 40 carried by each of the pawls or dogs 36 are telescopically associated within the bores of tubular members 41 and engageable with compression springs 42 therein. Studs or finger engaging portions 43 right angularly disposed upon the opposite ends of the tubular members 41 are projected through curved slots 44 in the boxings 38 and by means of which the respective ends 39 of the pawls 36 may be manually shifted for yielding contacting engagement with the teeth of the ratchets.

The ratchet members 14 and 15 are coupled as a unitary structure incident to the passage of fastening elements 45 therethrough.

It is obviously apparent that the shaft 27 will rotate continuously in either direction during relative oscillating or lateral shifting movement of the handles. The latter mentioned action being accomplished by the gearing mechanism associated in the manner shown and described in the foregoing. The ratio of the gearing connections may be such as to impart a complete revolution to the shaft 27 incident to the movement of the particular handle in a half circular movement. When employed as a wrench, the tool can be applied to a nut and held in place from any angle with one hand while quick operation is obtained with the other hand.

Continuous rotation of the socket wrench, chuck or the like may be facilitated in view of the connection of the handle 10 with the squared end of the shaft 17 thereby causing shaft 17 and gear 25 to turn with said handle. The operator holding handle 11 stationary with one hand and applying the object to be turned, will move handle 10 outward, thereby turning shaft 17 and driving gear 25 left and the movement of the idler gears 24 will in turn cause the driven gear 26 to turn right thereby moving the object applied in the direction desired; then the operator moves the handle 10 back or inward to engage the ratchet 14 and turn the cage and gears as one, causing the movement of the tool in the direction desired with both movements of the handle, making continuous movement. Handle 11 is free on the cage except for the action of the ratchet. The operator may hold handle 10 stationary and move handle 11 outwardly to engage ratchet 15. By so doing, the shaft 17, being held stationary by handle 10, the movement of the object applied is twice as great as handle 11 turns since it is turned both through movement of the ratchet member and gears. The return movement of the handle 11 does not impart any motion to the tool.

The invention is susceptible of various changes in its form, proportions and minor details of construction, and the right is herein reserved to make such changes as properly fall within the scope of the appended claim.

Having described the invention what is claimed is:—

A ratchet tool of the character described comprising multiple handle members having ratchet members revolvably mounted thereon, means connecting said ratchet members to facilitate movement thereof as a unitary structure, pawls for each of the handles, a driving mechanism located within and common to both ratchet members and operable exteriorly thereof by the handles and one of the handles having direct driving connection with the mechanism and selective engagement with one of said ratchet members to impart continuous rotation to the handle.

In testimony whereof I affix my signature.

HENRY J. WELLMAN.