

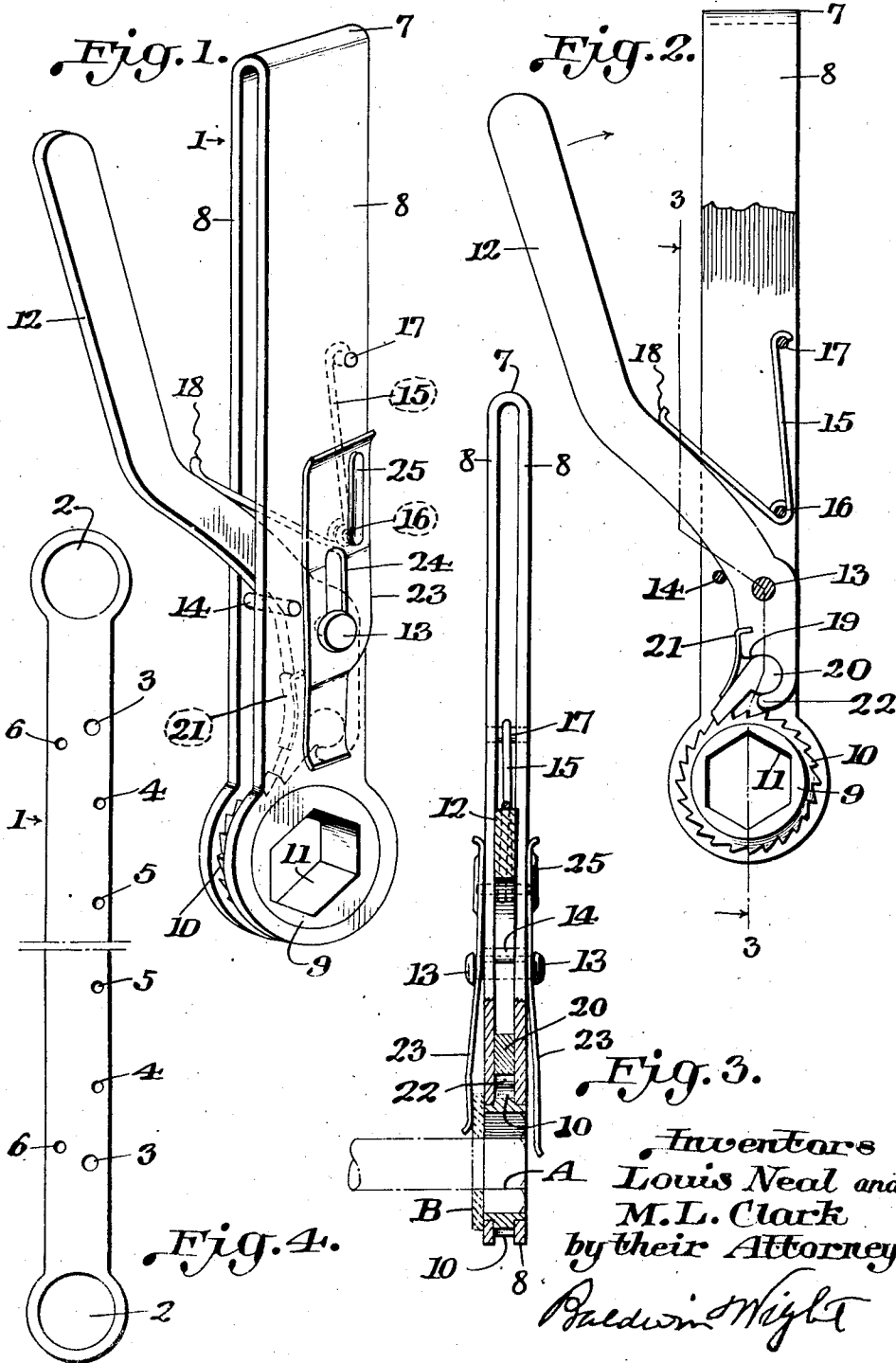
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L. NEAL ET AL

RATCHET WRENCH

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UNITED STATES PATENT OFFICE.

LOUIS NEAL AND MATTHEW L. CLARK, OF CARBONDALE, PENNSYLVANIA, ASSIGNORS
OF ONE-HALF TO SAID NEAL, ONE-FOURTH TO SAID CLARK, AND ONE-FOURTH
TO THOMAS COSGROVE, OF SCRANTON, PENNSYLVANIA.

RATCHET WRENCH.

Application filed September 19, 1924. Serial No. 738,663.

To all whom it may concern:

Be it known that we, LOUIS NEAL, a citizen of the United States, and a resident of Carbondale, in the county of Lackawanna and State of Pennsylvania, and MATTHEW L. CLARK, a citizen of the United States, and a resident of Carbondale, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in a Ratchet Wrench, of which the following is a specification.

An object of the invention is the provision of a simple and efficient ratchet wrench which may be constructed at a minimum of cost, since the main parts thereof are stamped out of sheet metal.

Another object is the provision of a wrench of this type which can be used to advantage in removing, replacing, or adjusting the nuts of friction band shafts in automobile transmission. Although primarily intended for this purpose, it is to be understood that the wrench is of great value wherever there is a limited working space.

A still further object of the invention is the provision of a wrench which will retain the removed nut and washer, if any, and allow them to be removed with the wrench. The nut and washer can also be replaced in the same manner.

Other objects of the invention will be apparent from the following detailed description and the appended claims.

In the drawings:

Figure 1 is a perspective view of the complete wrench,

Fig. 2 is a side elevation thereof with a portion broken away,

Fig. 3 is a section on the line 3—3 of Fig. 2, and

Fig. 4 is a plan view of the blank from which the handle is made.

A blank 1 of the form shown in Fig. 4 is stamped out of sheet metal, and is provided with enlarged end portions provided with circular openings 2 and with holes 3, 4, 5 and 6. This blank is bent at the middle 7 to form two parallel members 8 forming a handle. A hub 9 provided with a ratchet 10 fits revolvably within the openings 2, the ratchet being larger in circumference than the openings 2 and being sprung in between the two members 8. The hub is provided

with a hexagonal or other non-circular opening 11 to fit over bolts or nuts.

An operating member 12 is pivoted on a bolt 13 which passes through the openings 3 and connects the two members 8. This member 12 is stamped out of sheet metal and fits between the two side members 8. It is normally urged to the position shown in the drawings against a stop 14 which passes through the holes 6 in the members 8 by a spring 15. This spring is pivoted near its middle by a turn around the pin 16 and has one end hooked over the pin 17. These pins pass through the openings 4 and 5 respectively. The free end 18 of the spring bears against the operating member 12.

In an opening 19 in the inner end of the member 12 fits a similarly shaped end of a pawl 20, the outer end of which engages the ratchet 10. A flat spring 21, one end of which is held in a slit in the member 12, holds the pawl in engagement with the ratchet. The extreme end 22 of the member 12 is spaced from the pawl 20.

A flat spring member 23 with slightly outturned ends has a slot 24 by which the member is retained and permitted to slide on the pivot pin 13. It also has an elongated indented portion 25 which slides over the projecting end of the pin 16. In this manner the spring member 23 may have sliding movement but will always be held in proper position. There is one of these spring members on each side of the wrench.

When the device is to be used the spring members are slid to the position when the lower end of the slot 24 in Fig. 1 engages the pivot bolt 13. The opening 11 is then placed over the bolt or nut to be turned. One spring member 23 is then moved over the nut A and the other over the washer B as shown in Fig. 3. When the nut is unscrewed, the nut and washer will be retained between these spring members and may be lifted out by the wrench without any danger of dropping. The nut and washer may be replaced in the same manner.

When the wrench is placed over the nut, the latter may be turned by moving the handle 8, since the pawl and ratchet will prevent relative movement of the ratchet and handle in the direction in which it is desired to turn the nut. Or if the space is

too limited to allow this movement to take place readily, the operating member 12 may be moved in the direction of the arrow in Figure 2. This will actuate the pawl to turn the ratchet (and consequently the nut) a short distance. Upon release of the pressure, the spring 15 will move the member 12 outwardly, and the operation may be repeated rapidly as often as desired. Upon each return movement the pawl will engage a succeeding tooth of the ratchet.

If the holding spring members 23 are not needed they may be moved to the inoperative position shown in Figure 1. It will be evident that we have devised a ratchet wrench by which nuts or bolts may be removed when there is no chance of reaching them readily with an ordinary wrench, and by very slight movement. While especially adapted for removing nuts from a friction band shaft in a transmission case, it is obvious that it is adapted for use in many places where it is not possible to use the ordinary wrench and where only slight motion is possible. By stamping the two main parts out of sheet metal, the cost of manufacture is greatly reduced.

Details may be varied without in any way departing from the spirit of the invention which is to be regarded as limited only by the scope of the appended claims.

We claim as our invention:

1. A ratchet wrench comprising spaced metal strips having registering openings in one end, a hub revolvably carried in said openings and provided with ratchet teeth on its periphery lying between the strips, an

operating lever pivoted to the strips to swing between them, a single pawl pivoted on the lever, a spring for forcing the pawl into engagement with the ratchet teeth, a separate spring for forcing the lever outwardly, and means slidable on said strips adapted to hold a nut and washer when unscrewed by the wrench.

2. A ratchet wrench comprising a handle, a member having ratchet teeth on its periphery carried at the end thereof, a lever pivoted to the handle, a pawl carried by the lever and engaging the ratchet teeth, and slidable means carried by the handle and adapted to hold a nut and washer when unscrewed by the wrench.

3. A ratchet wrench comprising a handle, a member having ratchet teeth on its periphery carried at the end thereof, a lever pivoted to the handle, a pawl carried by the lever and engaging the ratchet teeth, and slidable spring plates carried by the handle and adapted to hold a nut and washer when unscrewed by the wrench.

4. A ratchet wrench comprising a handle, a member having ratchet teeth on its periphery carried at the end thereof, a lever pivoted to the handle, a pawl carried by the lever and engaging the ratchet teeth, slidable spring plates having slots engaging the lever pivot and elongated indented portions, and a pin engaging in said indented portions to guide said plates.

In testimony whereof, we have hereunto subscribed our names.

LOUIS NEAL.
MATTHEW L. CLARK.