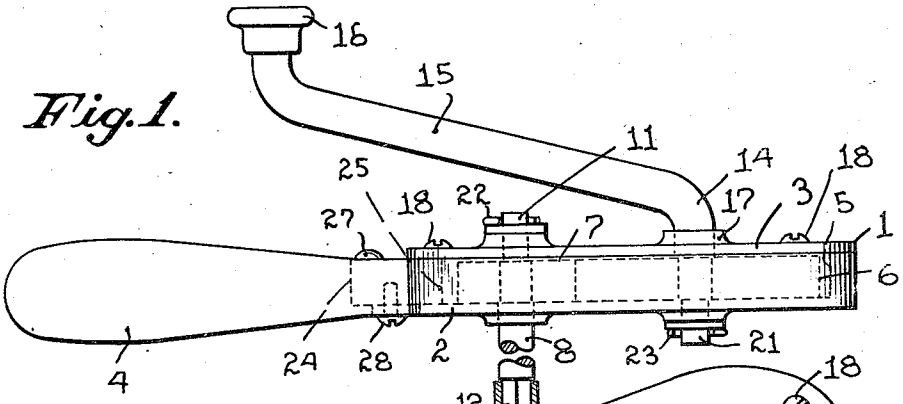
Nov. 8, 1927. 1,648,134

O. L. KIENTZ

SOCKET WRENCH

Filed Sept. 22, 1924

Fig. 1.



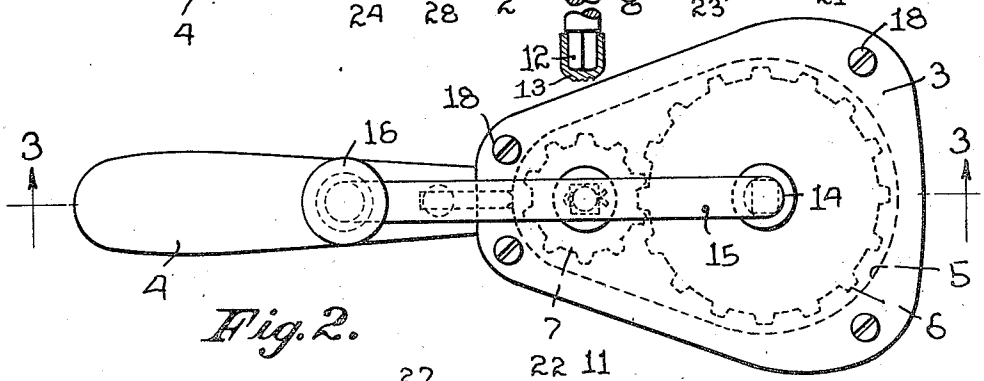
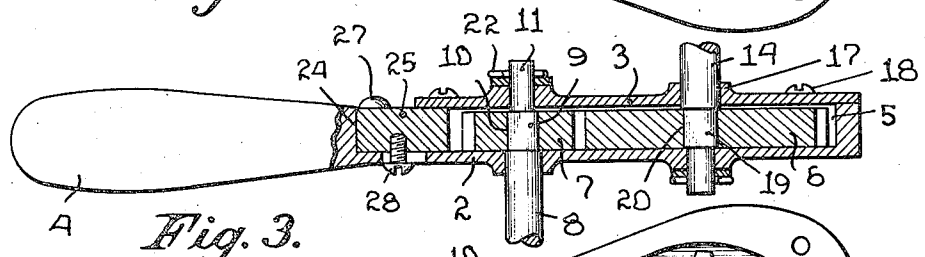


Fig. 2.

Fig. 3.



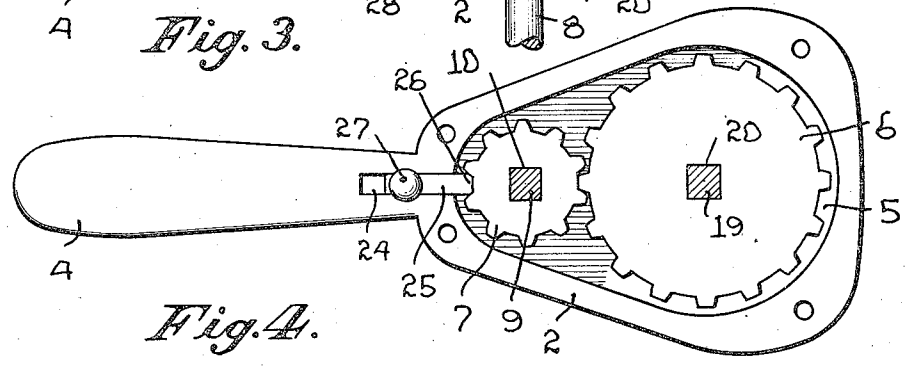


Fig. 4.

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UNITED STATES PATENT OFFICE.

OTTO L. KIENTZ, OF LEAVENWORTH, KANSAS.

SOCKET WRENCH.

Application filed September 22, 1924. Serial No. 739,134.

The present invention has for its purpose to provide, in a socket wrench, an arrangement of gearing in a handled casing for rapidly rotating a socket or tool carrying shaft for applying or removing nuts of various sizes or for operating a screw-driver.

Another purpose is to provide a wrench wherein the operating means and the tool carrying shaft are geared about two to one which enables the wrench to be used for saving considerable time in assembling and disassembling motors and various parts of automobiles.

The construction herein shown is very simple and practical and may be manufactured at a relatively low cost and sold at a reasonable profit.

Still another purpose is to provide a wrench wherein means is included for locking the gears so that the handled casing may be bodily rotated by the operator instead of rotating the socket or tool carrying shaft through the medium of the gears.

It is to be understood that the particulars herein given are in no way limitative and that, while still keeping within the scope of the invention, any desired modifications of detail and desired proportions may be made in the device according to the circumstances.

The invention comprises further features and combinations of parts to be hereinafter set forth, shown in the drawings and claimed.

In the drawings:

Figure 1 is a view in side elevation of the socket wrench constructed in accordance with the invention.

Figure 2 is a plan view of the same.

Figure 3 is a longitudinal sectional view on line 3—3 of Figure 2.

Figure 4 is a plan view with the cover plate removed, showing the smaller gear as locked by a sliding dog.

Referring to the drawings, 1 designates the casing as a whole which comprises the dominant section 2 and the cover section 3, the dominant section having an integral handle 4. It is obvious that the casing may be any size and any suitable shape. The dominant section and the handle are cast in one piece, the dominant section having a chamber 5 for the reception of gears 6 and 7 of any suitable diameters and any number of teeth. However, in the present instance, the gears are proportioned two to one, so that the shaft 8 (on which the gear 7 is mounted) may be rapidly rotated.

The shaft 8 has a reduced part 9 angular in cross sectional area to engage through an opening 10 of similar shape in the gear 7, whereby the shaft and the gear may rotate as one. The shaft 8 beyond the reduced part 9 has a cylindrical reduced extension 11 which engages in a bearing of the cover section 3 of the casing. The other end of the shaft has a reduced extension 12 which is also rectangular in cross sectional area to enter a socket of a tool 13 which may have a nut engaging socket at the other end, as shown. A magnetic socket screw-driver (not shown) or any other form of tool may be substituted for the tool illustrated in order that the wrench may be used for various purposes. In fact, in manufacturing the wrench, a set of various tools may accompany the same.

A second shaft 14 provided with a crank arm 15 and a swiveled knob 16 is provided. The cylindrical portion of this shaft is mounted in a bearing 17 of the cover section (which may be bolted to the dominant section at 18) while a reduced extension 19, which is rectangular in cross sectional area, engages through a similar-shaped opening 20 in the gear 6. The shaft 14 beyond the extension 19 has a cylindrical terminal 21 which engages in a bearing in the bottom of the dominant section of the casing. Suitable cotter pins 22 and 23 engage through the terminals of the shafts 8 and 14 to retain the shafts in their bearings. Suitable washers are placed beneath the cotter pins 22 and 23.

Adjacent where the handle 4 integrally adjoins the dominant section, an elongated slot 24 is formed for the reception of a dog 25. The nose end 26 of the dog is designed to engage between any two teeth of the gear 7 for the purpose of locking the gear, thereby enabling the entire wrench to be rotated manually and axially with the shaft 8, that is, when endeavoring to loosen very tight nuts or tighten nuts securely. The dog 25 on one side is provided with a lug constituting a thumb-piece 27 to be engaged by the thumb of the operator for adjusting the dog toward and from the gear 7. This

lug or thumb-piece 27 laterally overlies the walls of the slot to prevent displacement of the dog in one direction and threaded in the dog on its opposite edge is a screw 28, the head of which overlies the opposite portions of the slot to prevent movement of the dog in the opposite direction.

The handle 4 and the crank shaft 14 are disposed on diametrically opposite sides of the tool carrying shaft 8. Thus, the crank shaft may be extended in a direction away from the tool carrying shaft and in the vertical plane of the handle 4, and the shaft 8 locked against rotation by the actuation of the latch 25. This arrangement of parts makes it possible for the crank and the handle to be used jointly by the two hands to start a nut which, having been loosened, may then be readily removed by retracting the latch and rotating the crank shaft on its own axis. So long as the latch engages the gear 7, the whole device becomes a locked mechanism and may be used as a T-wrench for starting a nut.

The invention having been set forth, what is claimed is:

A wrench comprising a casing having a handle projecting therefrom, a tool carrying shaft mounted in bearings in the casing and projecting at right angles to the same and to the handle, a crank shaft journalled in bearings in the casing and disposed on the diametrically opposite sides of the tool carrying shaft from the handle, the crank shaft having an operating knob at its extremity, a gear couple connecting the crank shaft and the tool carrying shaft and comprising a small gear on the tool carrying shaft and a relatively large gear on the crank shaft to provide for increased speed of the tool carrying shaft with respect to the crank shaft, and a latch member carried by the casing and accessible at the handle for locking the gear on the tool carrying shaft against rotation with respect to the casing.

In testimony whereof he affixes his signature.

OTTO L. KIENTZ.