June 29, 1926. 1,590,200

J. J. McGUCKIN

SOCKET WRENCH

Filed May 2, 1924

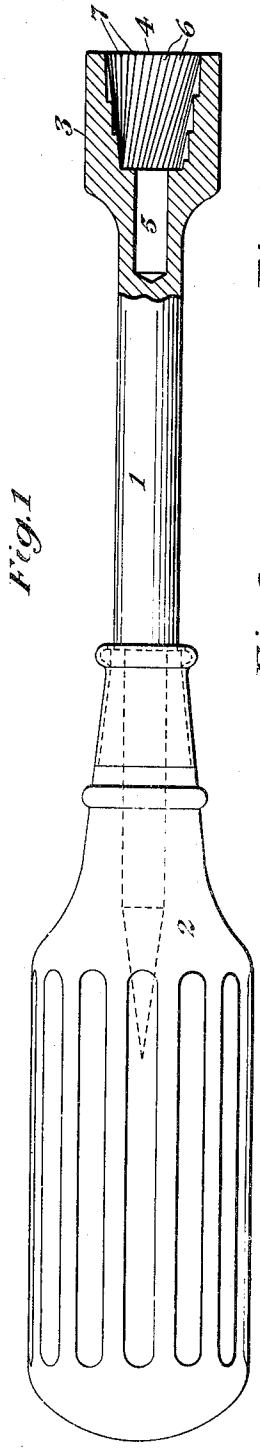



Fig. 1

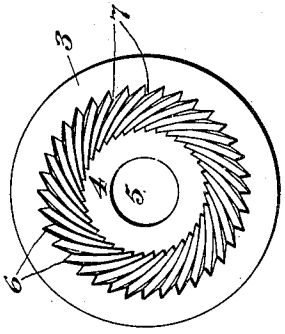



Fig. 2

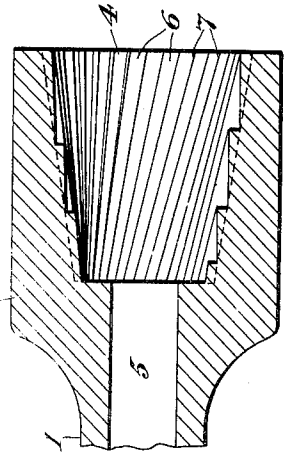



Fig. 3

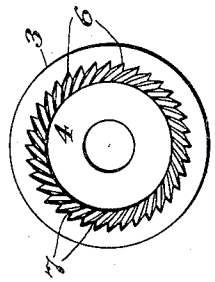



Fig. 5

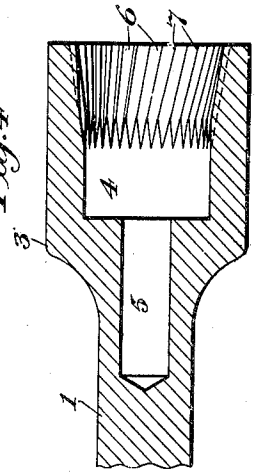



Fig. 4

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By his Attorney
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# UNITED STATES PATENT OFFICE.

JOHN J. McGUCKIN, OF BROOKLYN, NEW YORK.

## SOCKET WRENCH.

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My invention relates to socket wrenches intended, particularly, for turning round nuts; and the particular object of my invention is to produce such a wrench which will grasp a nut easily and firmly and will be caused to hug it, by the act of turning down the nut, but may be readily freed from the nut without danger of backing it off.

Another object of my invention is to so form the socket of the wrench that it will detachably hold a round nut against dropping out of its own weight, thereby facilitating the mounting and dismounting of the nuts upon their threaded shanks.

In the drawings Fig. 1 is an elevation of a wrench embodying my invention, the socket end being shown in section; Fig. 2 is an end view of the socket as looking to the right on Fig. 1; Fig. 3 is a longitudinal section of the socket; Fig. 4 is a longitudinal section of a modified form of a socket; and Fig. 5 is an end view of the same, taken as looking to the left on Fig. 4. Figs. 4 and 5 are on an enlarged scale and Figs. 2 and 3 are on a still larger scale as compared with Fig. 1.

In all the figures similar parts are designated by corresponding reference numerals.

The wrench may be provided with a conventional shank 1 inserted in a suitable handle as 2, the shank being provided at its free end with an enlarged terminal 3 having an interior socket 4, preferably having an extension 5 adapted to freely receive the end of a threaded shank upon which a nut may be run. The interior socket 4 is provided with a series of grooves 6, 6, forming between them a series of ribs 7, 7, extending entirely around the interior wall of the socket.

These ribs have a moderate clockwise pitch or twist, as shown in the drawing; and they also have, preferably, a lateral pitch in the same direction. The result of this arrangement is that when the socket is passed over and around the nut and slid down upon it so that the ribs 7, 7 grip the periphery of the nut, if the wrench is pressed against the nut and turned clockwise, the flanges will bite into the nut; and, upon the wrench being turned clockwise, the wrench socket will be caused to hug the nut and will be drawn down over it and into tighter contact with it because of the clockwise, longitudinal twist in the ribs 7, 7, the lateral pitch of the ribs causing them to present their acute lateral angles against the resistance of the nut, thereby causing the ribs to better grip the nut against slipping.

A comparatively slight relative rotation of the wrench will be sufficient to seat it firmly upon the nut so that the nut may be carried forward and spun into desired position, increasing resistance on the part of the nut simply causing the wrench to grip it the tighter.

When the nut has been run home the wrench may be freed from it by pulling it away from the nut, as the twist in the ribs is not sufficient to interfere with the wrench being pulled away from the nut; for, if the wrench is held firmly in the hand, the effect of pulling it away from the nut will be to impart a slight forward impulse to the nut, setting it tighter; whereas, if the wrench is held with a yielding grip, it may be drawn slightly anti-clockwise in the hand so as to permit it to free itself from the nut. And in case the wrench does not clear the nut readily a slight sidewise jar will be sufficient to loosen its grip on the nut.

For backing off nuts, where the resistance is usually less than in running them home, the ribs 7, 7 will be found to give a sufficiently firm hold under ordinary circumstances. But I desire it to be understood that if a wrench is desired which will afford a particularly strong grip for backing off nuts, or for running on left handed nuts, the ribs in the socket may be given an anti-clockwise twist, and a corresponding lateral pitch, so as to produce the same results in gripping the nut as have been explained above as applying to the clockwise twisted ribs.

By means of my improvements I secure a socket wrench which grips a round nut evenly all around its periphery; which, because of the taper in the socket, causes it to wedge down on the nut; and, because of the twist and pitch of the interior ribs, causes it to hug the nut persistently as the wrench drives it home. Furthermore when the nut has been seated there is no danger of backing it off in the operation of removing the wrench, as would be the case if the socket were provided with a low pitched screw thread, which would jam about the nut so tightly as to cause the nut to hang to the wrench when the wrench was reversed to back it off. Furthermore a low pitched screw thread, also, would require a considerable rotation of the wrench to jam it upon

the nut, and, also, a very considerable rotation to free it from the nut, both of which movements consume time and energy and are to be avoided if possible.

The use of my improved wrench involves practically no waste motion nor any danger of backing off a nut after it has been run home.

My improved wrench, also, may be conveniently used for applying nuts where it may be inconvenient to use the fingers, by placing the nut into the socket of the wrench, pressing it home with the finger and at the same time slightly rotating the wrench clockwise, thereby causing it to grip the nut with sufficient firmness so that the nut will retain its position in the socket, and, by using the wrench as a handle, may be placed upon the shank and spun down thereon, the wrench seating itself more firmly about the nut as the resistance may be increased while the nut is being run down.

I desire it to be understood that I have illustrated a preferred but not an exclusive form of my invention. For it is obvious that details might be modified by the use of equivalent forms of grooves or ribs, without departing from the spirit of my invention as claimed.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:—

1. A wrench embodying a shank carrying a terminal with an unbroken outer wall and having an outwardly-flaring conical cavity therein which is provided interiorly with a multiplicity of independent, uniform, integral, longitudinally disposed ribs, having inwardly extending angular edges and extending entirely around the cavity, the ribs being deflected slightly circumferentially relative to the longitudinal axis of the cavity.

2. A wrench embodying a shank carrying a terminal with an unbroken outer wall and having an outwardly flaring conical cavity therein which is provided interiorly with a multiplicity of independent, uniform, integral, longitudinally disposed ribs, having inwardly extending angular edges and extending entirely around the cavity, the ribs having a slight helical deflection circumferentially relative to the longitudinal axis of the cavity and each rib presenting an acute angled edge in the direction of its deflection.

JOHN J. McGUCKIN.