Nov. 18, 1952 L. J. ALMES 2,618,189

SOCKET WRENCH WITH PILOT

Filed July 8, 1948

Fig. 1.

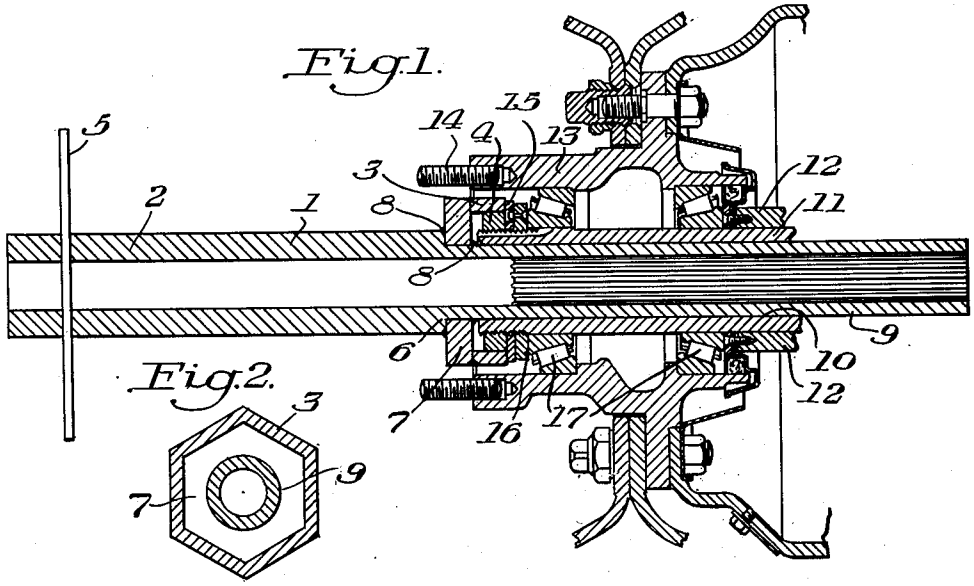


Fig. 2.

Fig. 3.

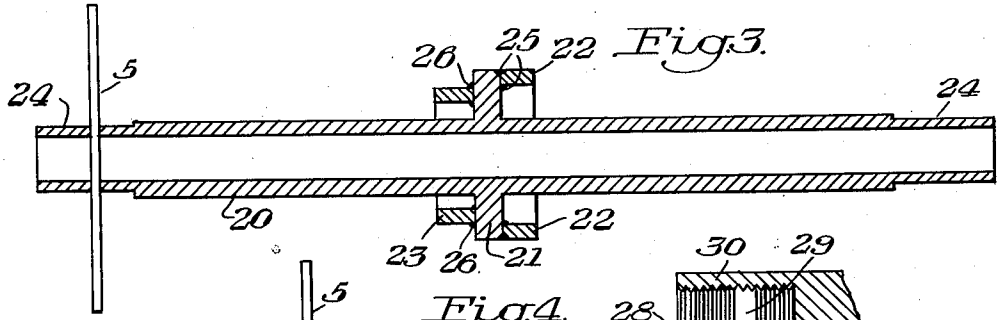


Fig. 4.

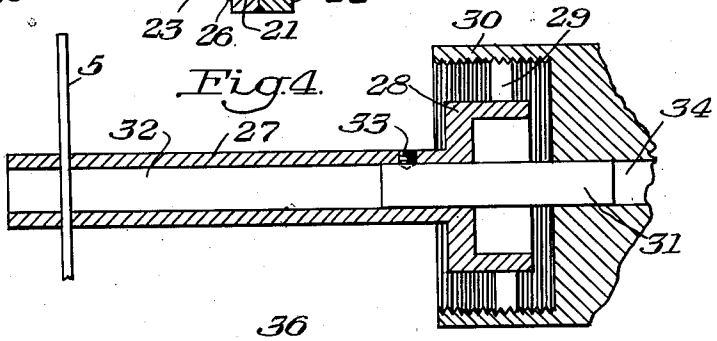
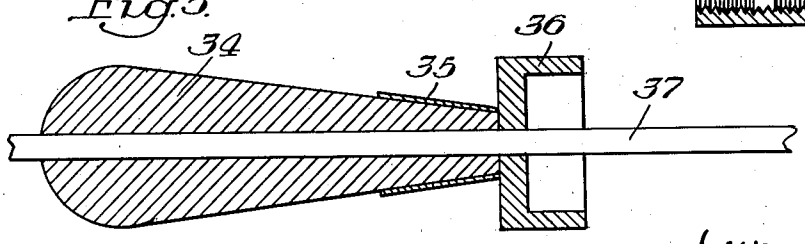


Fig. 5.



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SOCKET WRENCH WITH PILOT

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1 Claim. (Cl. 81—121)

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This invention relates generally to wrenches and more particularly to socket wrenches for removing and adjusting threaded members that are inaccessible and difficult to align and manipulate.

This invention is particularly advantageous for use in adjusting or removing the lock nut or bearing adjusting nut in a rear hub bearing assembly of a truck. The bearing adjusting nut and its lock nut in the rear hub assembly of a truck threadably engage the tube extending from the rear housing and little clearance is allowed between the nut and the bore of the hub. It is quite difficult to properly align the nut in order that the fine threads thereof might engage the threads in the tube when replacing the same. Frequently the threads are galled due to the fact that it is difficult to hold the nut coaxially with the tube.

The principal object of this invention is the provision of a wrench having a noncircular or polygonal section for engagement with the threaded member and a pilot section for maintaining the nonround member coaxial with the threaded section on which the threaded member is to be applied.

Another object is the provision of a socket wrench arranged to selectively engage the noncircular or polygonal bore or exterior of the threaded member and having a pilot section to maintain the wrench in axial alignment.

Another object is the provision of a double-ended socket and pilot wrench, the pilot section of one socket member providing the handle section of the other socket member.

Other objects and advantages appear hereinafter in the following description and claim.

The accompanying drawings show for the purpose of exemplification, without limiting the invention or claims thereto, certain practical embodiments of the invention wherein:

Fig. 1 is a view in vertical section of a socket wrench comprising this invention as applied to the rear hub section of a truck;

Fig. 2 is an end elevation of the wrench illustrated in Fig. 1;

Fig. 3 is a sectional view of a double socket wrench;

Fig. 4 is a vertical section of a socket wrench as applied to an externally threaded member; and

Fig. 5 is a view partly in section showing a screw driver type of socket wrench provided with a pilot section.

Referring particularly to Fig. 1 of the drawings, 1 represents the wrench which consists of

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the stem member 2 having a nonround or polygonal member 3 engaging the lock nut 4 and provided with a turning means such as the handle 5. The stem 1 in this structure is tubular and is provided with a shoulder 6 intermediate of its ends and against which the base 7 of the nonround or socket member 3 is abutted and welded thereto as indicated at 8. The reduced diameter section of the stem 1 is coaxial with the nonround socket member 3 and extends therebeyond as indicated at 9 to form the pilot section of the wrench which is designed to have a sliding fit within the bore 10 of the tube 11 that is secured to and extends out of the end of the rear housing 12. The axle shaft has been removed in Fig. 1 but consists of a shaft having a splined end that engages in a pinion in the differential and extends out of the rear housing in spaced relation of the bore of the tube 11 and is provided with a head on its outer end which is bolted to the hub 13 by means of the stud bolts 14.

The nonround socket member 3 engaging over the lock nut 4 is thus accurately aligned by the pilot section engaging the bore of the tube 10. The lock nut 4 may be removed which would permit the removal of the lock ring 15 and then a larger socket member may be used for removing or adjusting the bearing adjusting nut 16 that holds the spaced bearings 17 in assembled position.

In the structure shown in Fig. 3 the tubular stem 20 is of uniform diameter throughout its length and is designed to fit the inner bore 10 of the tube 11. Intermediate of its ends the stem 20 is provided with a radial flange member 21 having a large nonround or polygonal socket 22 welded on one face and a smaller nonround socket 23 welded on the opposite face. Each of the sockets 22 and 23 is disposed coaxially with the surface of the stem 20 and the respective ends of the stem function as pilot sections for their non-round socket members. The outer ends of the stem 20 may be formed with the nonround sections 24 which are slightly smaller in diameter than the other portions of the stem which function as pilot sections to prevent the pilot sections from becoming marred or otherwise scored when applying an ordinary wrench to the nonround sections 24 or to prevent the radial handle 5 from distorting or otherwise upsetting the metal on the pilot sections of the wrench. The nonround socket members 22 and 23 may be welded to the radial flange 21 as in-

dicated by the welding beads **25** and **26**, respectively.

In the structure shown in Fig. 4 the wrench is constructed of the tubular stem **27**, one end of which is welded to the cup-shaped or polygonal socket member **28** that engages the nonround bore of the nut **29** that is threadably engaged with the internal thread on the tubing **30**. The pilot section **31** is removably set in the bore **32** of the stem by means of the set screw **33**. Thus, a pilot section **31** may be changed for different sizes of coaxial openings **34** in the tube **30**. The stem **27** may or may not be tubular. The bore **32** and the inner end of the pilot section **31** may be nonround if it is ever necessary to put a rotary torque on the pilot section. However, if the section **31** functions only as a pilot section then it is unnecessary to make a nonround joint with the bore **32** of the stem.

In the structure shown in Fig. 5 the socket wrench is the screw driver type having a wooden handle **34** secured to the metal stem **35** that has affixed thereto a nonround or polygonal socket member **36** and which is bored to receive the pilot section **37**.

In each instance the pilot section is made sufficiently long to properly engage the bore of the tube on which the threaded member is to be secured so as to provide a good bearing that will axially align the nonround member with the threaded member and the threads on the member to which it is to be applied. The threaded member or nut may be stored or otherwise retained on the nonround socket member before placing the pilot in the opening to retain the nut in coaxial concentric position when threading the same onto the tubular member. By making the pilot section replaceable relative to the stem one is enabled to change the pilot section and thus provide a more flexible and dependent wrench.

I claim:

A wrench for applying or removing a threaded member on a complementary threaded member consisting of a stem, a polygonal tubular socket secured to said stem, said socket snugly receiving the threaded member to hold it coaxially concentric with the stem, a pilot section extending into said socket and secured to said stem in coaxial concentric relationship, and means on the stem to rotate the socket while the pilot section maintains the socket in alignment with the complementary threaded member on which the threaded member is applied or removed.

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