

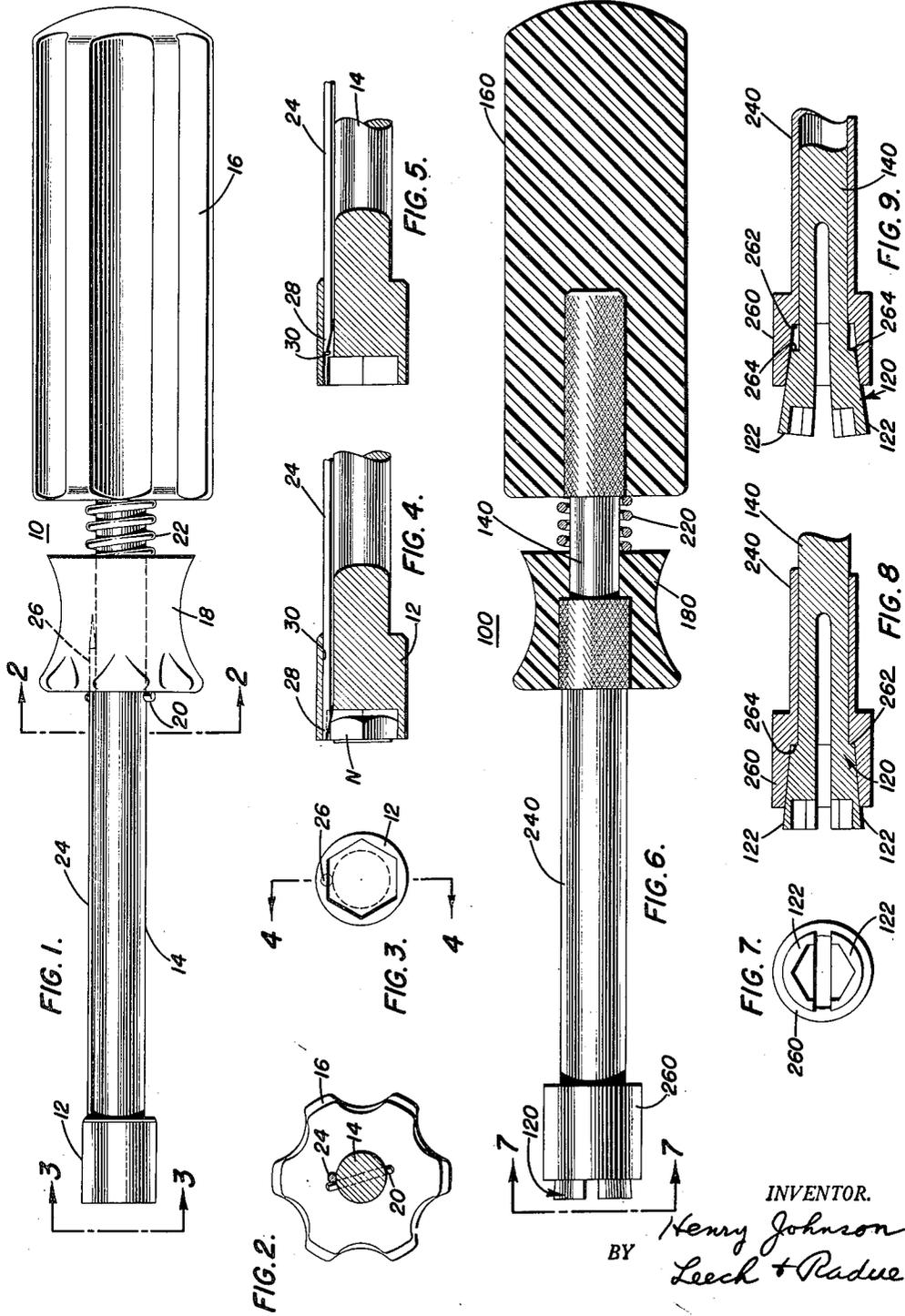
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WRENCH HAVING SLIDABLE NUT-RETAINING WEDGE

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WRENCH HAVING SLIDABLE NUT-RETAINING WEDGE

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2 Claims. (Cl. 81—125)

This invention relates to a hand tool, and more particularly to a specific form of socket wrench.

In various industries and repair and assembly organizations there are certain operations requiring a large number of applications of nuts or similar threaded members of the same size to a bolt end or the like. Hitherto magnet socket wrenches have been used to pick up and hold a nut while the tool is turned to make the required threaded engagement. For some purposes, however, nuts of non-magnetic material are acceptable. In some special instances where nuts of magnetic material are used, it is highly desirable that they not be magnetized to any extent, as would result from application with a magnetic wrench.

It is a general purpose of this invention to provide a simple and efficient form of socket wrench which will satisfy all these purposes.

More specifically it is an object of this invention to provide a hand tool of the socket wrench type having wedging means selectively operable to grip and to disengage the side of a nut or the like within the socket member.

In a preferred embodiment of the invention a socket member is integrally mounted on the end of an elongated shank or rod member having a handle on the other end, and provided with a retaining rod operable by a sliding collar on the rod member and having a tapered end extending into the socket member for engagement with a side of a nut.

In another embodiment the socket member is split and caused to open or close by movement relative to an operating member having tapered engagement with the split portions of the socket member.

These and other features of the invention will be more fully understood when taken with the accompanying drawing, in which:

Fig. 1 is a side elevation of a preferred form of the socket wrench;

Fig. 2 is a cross-section taken on line 2—2 of Fig. 1;

Fig. 3 is an end view taken on line 3—3 of Fig. 1;

Fig. 4 is a fragmentary partially sectioned side elevation showing the relation of a nut to the socket member;

Fig. 5 is a fragmentary sectional elevation similar to Fig. 4 but showing a different position of the means for holding the nut within the socket member;

Fig. 6 is a partially sectioned side elevation of a modified form of the socket wrench;

Fig. 7 is an end view taken on line 7—7 of Fig. 6;

Fig. 8 is a fragmentary longitudinal section showing the parts of the tool of Fig. 6 in nut holding relation; and

Fig. 9 is a fragmentary elongated section similar to Fig. 8 and showing the released relation of the nut gripping socket member.

Referring to Fig. 1 of the drawing, a hand tool in the form of a socket wrench 10 is shown to comprise a head or socket member 12 integrally mounted on one end of a shank or elongated rod member 14 in alignment therewith. An enlarged handle 16 is suitably secured to the opposite end of the rod member 14 with a sliding collar 18 mounted on the rod member 14 between the head 12 and the handle 16. As shown the sliding collar 18 is of a size and shape to permit ready engagement thereof by the fingers of a hand grasping the handle 16.

The sliding collar 18 is held against a lateral projection, in the form of a stop pin 20 passed through an intermediate portion of the rod member 14, by means of a coil

spring 22 acting between the adjacent ends of the handle 16 and the collar.

The sliding collar 18 carries a slender retaining rod or strip 24, one end 26 of which is securely anchored in any suitable manner within the collar and the other end portion of which is formed with a tapered or wedge shaped end for purposes to be described.

It will be noted in Figs. 3 and 4 that the open ended socket member 12 is shaped to receive a polygonal nut N of predetermined size, and that a minor enlargement is made adjacent one nut-engaging face of the socket. This enlargement of the socket opening results from the formation of an opening 30 extending longitudinally through the head 12 for receiving and guiding the retaining rod 24, the tapered end 28 of which enters the socket space of the head 12 to the position shown.

In operation, when it is desired to pick up a nut for attachment the wedge shaped end 28 of the retaining rod is withdrawn to the position shown in Fig. 5 by retraction of the collar 18 against the spring 22, and the socket is placed over a nut on a plane surface. Release and advance of the rod 24 causes the tapered end 28 thereof to wedge between the socket opening and the adjacent side of the nut N so as to retain the nut in the wrench so that it may be picked up and applied to a threaded bolt or stud. A nut thus retained can be released from the socket wrench at any time by retraction of the retaining rod 24 in the manner indicated.

In the modified form of the invention shown in Figs. 6 to 9, inclusive, a socket wrench or tool 100 comprises a socket member 120 slit to provide opposed jaws 122, 122 having a spring bias away from each other, as shown in Fig. 9. These jaws 122 are an integral part of the corresponding end of elongated rod member 140 which is anchored at its other end in an enlarged handle 160. As before a sliding collar 180 for finger engagement is mounted on the rod member 140 and urged away from the adjacent end of the handle 160 by an interposed coil spring 220.

Instead of a rod for controlling the gripping action of the socket member 120, this modified tool is provided with an elongated sleeve 240 sliding on the rod member 140 and having one end anchored or otherwise secured to the collar 180. The other end of the tubular sleeve 240 is formed with an enlarged end 260 formed to receive the major portion of the opposed jaws 122 in tapered, complementary engagement, as shown in Fig. 8. Instead of a projection on the shank or rod member, this embodiment utilizes abutting surfaces 262 and 264 at the inner portion of the enlarged end 260 and the adjacent portions of the jaws 122.

Starting with the tool 100 in the position illustrated in Fig. 9, a nut of shape and size corresponding to the socket defined by the closed jaws 122 may be gripped and held by releasing the sliding collar 180 and thus permitting the spring 220 to urge the enlarged end over the outer sides of the jaws 122 to bring them together into the gripping position shown in Fig. 8. Release of the nut is accomplished by reverse movement.

The socket, elongated rod member, retaining rod or sleeve, and spring means will be formed of metals suitable for the purpose, but the handle and sliding collar can be made of plastic, wood or any other material having suitable physical properties.

While the preferred embodiment of this invention and a modification thereof have been specifically disclosed, it will be understood that variations can be made in details of construction and arrangement of parts without departing from the principles of this invention and the scope of the appended claims.

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

1. A socket wrench comprising a nut-receiving socket member having a closed end, an elongated rod member extending from the closed end of the socket member, a handle secured to the extending end of the rod member, a collar slidable on the rod member, said rod member having a projection between the socket and the handle to limit movement of the collar toward the socket member, spring means acting between the adjacent por-

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tions of the handle and the collar to hold the collar against the projection, and a retaining rod having one end secured in the collar and having the other end sliding through the socket member adjacent a nut-engaging surface thereof, said other end being tapered to wedge between the side of a nut and the socket member.

2. A hand tool comprising an elongated member having a socket secured on one end and adapted to receive a polygonal nut, a sliding collar on the shank member, a stop projection on the shank member at a position spaced from the socket and between the socket and the collar, spring means urging the collar against the stop projection, and a straight retaining strip movable with

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the collar and having a tapered end sliding in the socket adjacent a lateral nut engaging surface to secure a nut by wedging action when the collar is against the stop projection.

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