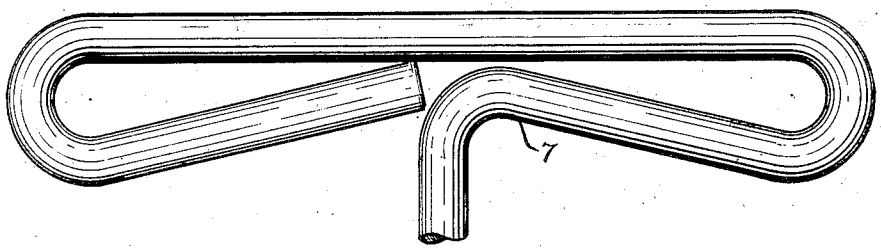
Jan. 30, 1923. 1,443,413.

J. JOHNSON.

SOCKET WRENCH.

FILED JULY 1, 1920.

Fig. 1.



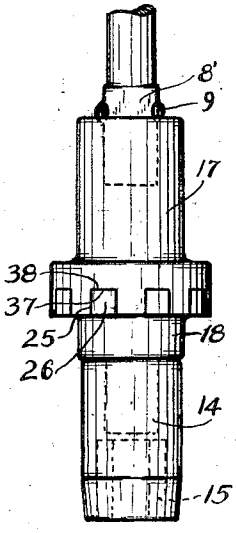


Fig. 2.

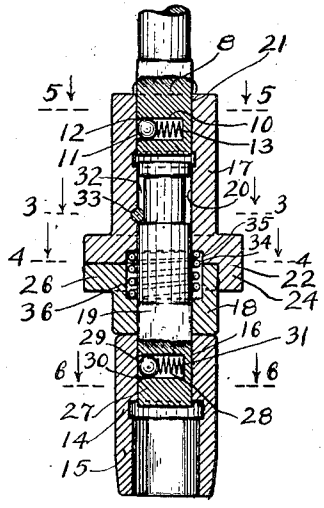


Fig. 3.

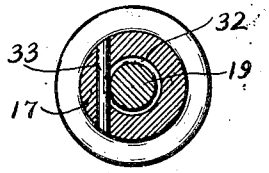


Fig. 5

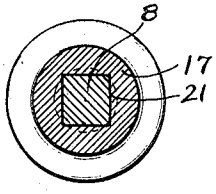


Fig. 4.

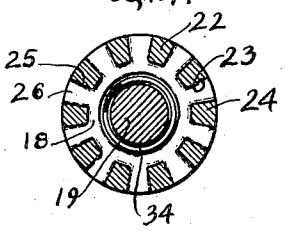
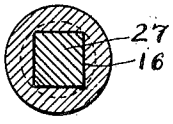


Fig. 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOSEPH JOHNSON, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO SNAP-ON WRENCH COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

SOCKET WRENCH.

Application filed July 1, 1920. Serial No. 393,295.

To all whom it may concern:

Be it known that I, JOSEPH JOHNSON, a citizen of the United States, and resident of Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Socket Wrenches, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

The invention relates to socket wrenches.

One of the objects of the invention is to provide an attachment which may be used with interchangeable sockets and interchangeable handles of different shapes and sizes to turn the socket on short oscillations of the handle.

A further object of the invention is to provide a clutch connection between the handle and socket of the wrench of simple and strong construction and one which permits the socket to be progressively turned in either direction by successive oscillations of the handle.

The invention further consists in the several features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings: Fig. 1 is an elevation view of a device embodying the invention; Fig. 2 is a vertical sectional view through the device, parts being broken away; Fig. 3 is a section taken on the line 3—3 of Fig. 2; Fig. 4 is a section taken on the line 4—4 of Fig. 2; Fig. 5 is a section taken on the line 5—5 of Fig. 2; Fig. 6 is a section taken on the line 6—6 of Fig. 2.

A handle member 7, which may be interchangeable with one or more others having different shapes, is provided with a squared end 8 having stops 9 punched therefrom. Extending to one of the faces in this end of the shank portion, a transverse opening 10 is provided. A ball 11 is mounted in this opening and held against a crimped retaining portion 12 by a spring 13. This spring-pressed ball forms a friction clamp to hold the handle firmly to the member to which it is attached.

A sleeve socket member 14 has a nut engaging end 15 and square hole 16 communicating therewith. This socket member represents one of a series of interchangeable sockets, each one having a square hole of the same size to fit the end 8 of any of the handles 7 but a nut engaging end of a different size.

It frequently happens that the nuts or bolts to be loosened by the socket wrench are in such a position as to prevent free rotation of the handle, and to allow of operation of the socket on a partial turn of the handle I have provided an attachment having detachable connection with one or more handles and with one or more socket members.

This attachment consists of members 17 and 18 relatively movable with respect to each other. The member 18 carries a part 19 which may be integral with or firmly connected to said member.

The member 17 has a bore 20 and a square socket 21 into which the squared end 8 of any one of the interchangeable handles can be inserted. The body portion of this member is here shown as cylindrical and an annular flange 22 on the end adjacent the member 18 is provided with radially extending slots 23 forming teeth 24.

The member 18 has a flange portion in which radially extending slots 25 are made to provide teeth 26. When the member 17 is moved into operative relation with the member 18 the teeth 26 engage in the slots 23 and the teeth 24 engage in the slots 25. Thus it will be noted that this construction provides a jaw clutch connection between the members 17 and 18. By bringing the parts into clutching engagement, rotating the member 17 a partial turn while so engaged then releasing the parts from engagement and moving the member 17 back to its former position and again bringing it into operative relation with the member 18 and imparting another partial turn, the member 18 may be given a progressive rotation in either direction. The function of these parts is similar to that of a ratchet, so that broadly considered the construction forms a ratchet attachment but the claw clutch construction is preferred to the usual ratchet construction because of its greater strength and simplicity.

The part 19 has a squared end having a drive fit engagement with the member 18 and extending therefrom to fit in the squared hole 16 of any one of the interchangeable sockets. The shank 27 is provided with a transverse opening 28 extending to one of its faces. A ball 29 is mount-

ed in this opening and held against a crimped retaining portion 30 by a spring 31. This spring-pressed ball forms a friction clamp to hold the socket firmly connected with the attachment though they may be readily pulled apart when desired.

The part 19 has a cylindrical portion slidably mounted in the bore 20 and provided with an annular groove 32. A pin 33 extends into the bore 20 and said groove 32 to engage the upper shoulder of the part 19 formed by said groove to limit the longitudinal movement of the members 17 and 18 with respect to each other. A coiled spring 34 surrounding the part 19 is interposed between the members 17 and 18 with its ends seated in recesses 35 and 36 in said members and serves to normally hold said members out of clutched engagement with each other.

With the above construction when the attachment is connected with the desired handle and socket repeated oscillations of the handle, with engagement and disengagement of the clutch, will produce a rotation of the socket so that a nut or bolt in a place where the ordinary full turn wrench could not be used may be readily tightened or loosened.

It will be noted that the upper sides 37 of the teeth 26 abut against the bottoms 38 of the grooves or slots 23 when the parts are in clutch engagement so that downward pressure upon the handle is transmitted directly from the member 17 to the member 18.

I desire it to be understood that this invention is not limited to any specific form or arrangement of parts except in so far as such limitations are specified in the claims.

What I claim as my invention is:

1. An attachment for socket wrenches comprising a ratchet member having a polygonal socket to detachably receive the shanks of interchangeable handles, and a cooperative ratchet member provided with a polygonal shank to detachably fit the sockets of interchangeable wrench sockets.

2. An attachment for socket wrenches comprising a ratchet member having a bore with a handle-receiving socket at one end and a recess at its other end concentric with the bore, the end containing said recess having radially extending slots communicating with said recess to form teeth, a cooperative ratchet member provided with radially extending teeth adapted to seat in said slots, a shank member fixedly secured to the second member having one end projecting beyond the end of the second member to form a wrench-socket shank and its other end slidably mounted in the bore of the first-named member.

3. An attachment for socket wrenches comprising a ratchet member having a bore with a handle-receiving socket at one end and a recess at its other end concentric with the bore, the end containing said recess having radially extending slots communicating with said recess to form teeth, a cooperative ratchet member provided with radially extending teeth adapted to seat in said slots, a shank member fixedly secured to said second ratchet member and having ends projecting beyond said second ratchet member, one end of said shank member forming a wrench-socket shank and the other end forming a guide slidably mounted in the bore of the first ratchet member, means engageable with said shank member to limit longitudinal movement of said ratchet members with respect to each other, and means for normally holding the ratchet members in inoperative position.

4. In a ratchet attachment for socket wrench sets, the combination of a pair of axially alined ratchet members having longitudinally movable interfitting toothed engagement with each other, one of said ratchet members having a longitudinally extending polygonal handle-receiving part at one end and the other of said members having an end with a longitudinally extending polygonal part for detachable connection with a wrench socket.

5. In a wrench set having interchangeable wrench sockets and interchangeable operating handles having shanks adapted to take said sockets, a ratchet attachment alinable with and interposable between any of said sockets and any of the shanks of said handles comprising a member having an end to interfit with any of the shanks of said handles, a member having an end to take any of said wrench sockets, and a ratchet connection between said ends of said members.

In testimony whereof, I affix my signature.

JOSEPH JOHNSON.