G. W. DAVIS.

WRENCH.

APPLICATION FILED FEB. 25, 1916.

1,182,652.

Patented May 9, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

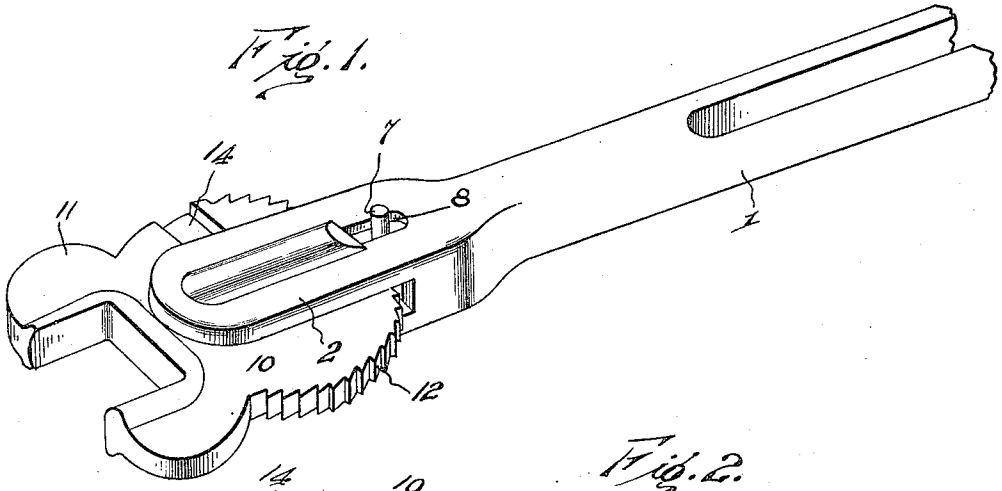
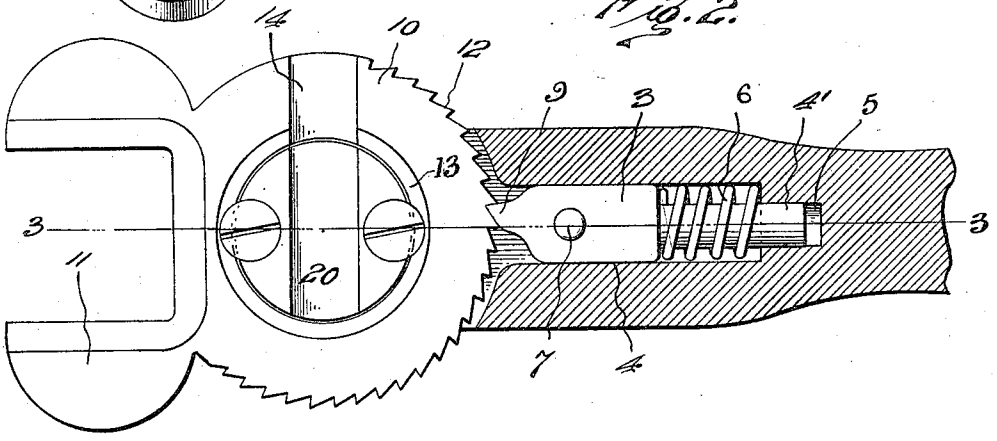


Fig. 2.



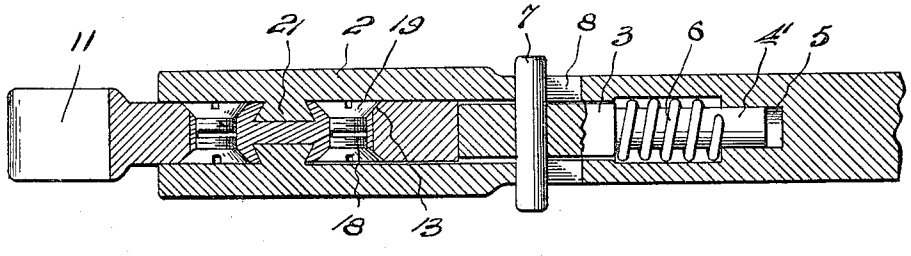


Fig. 3.

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2 SHEETS—SHEET 2.

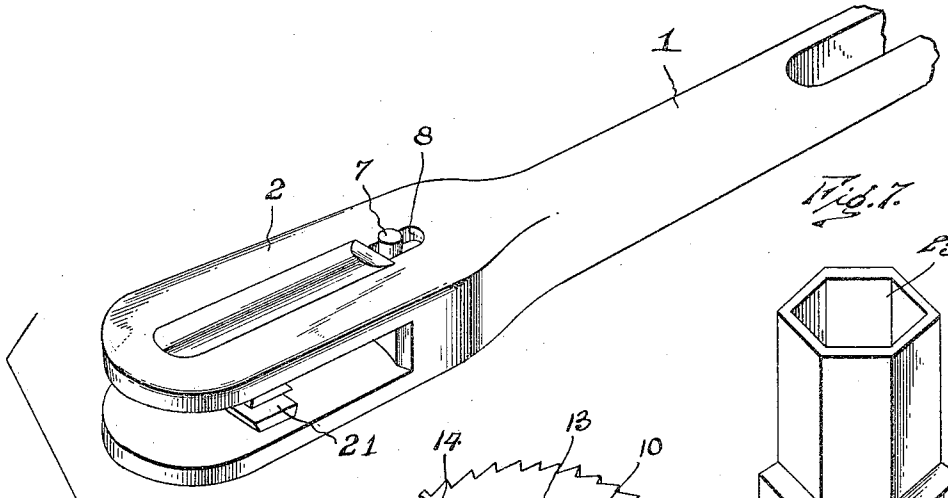
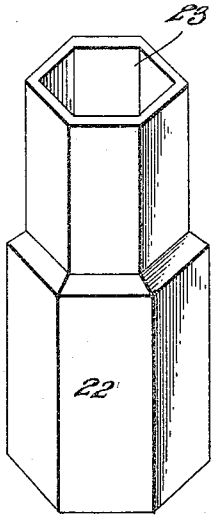


Fig. 1.



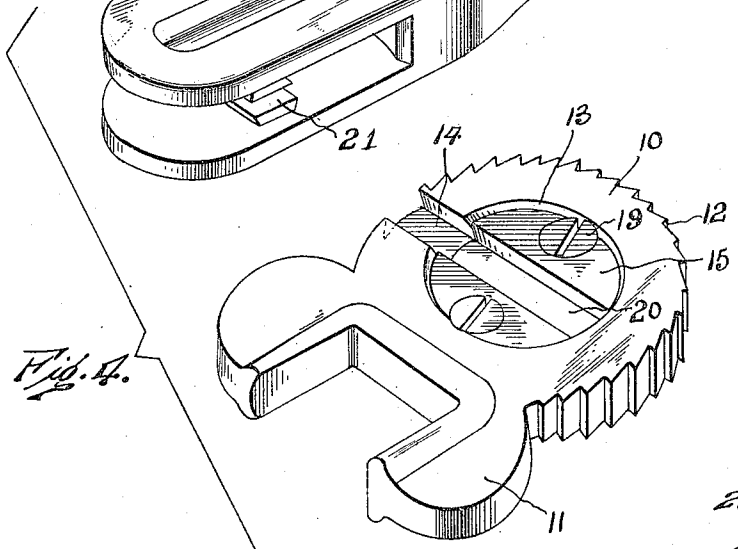


Fig. 4.

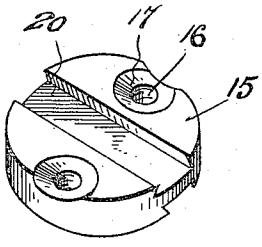


Fig. 5.

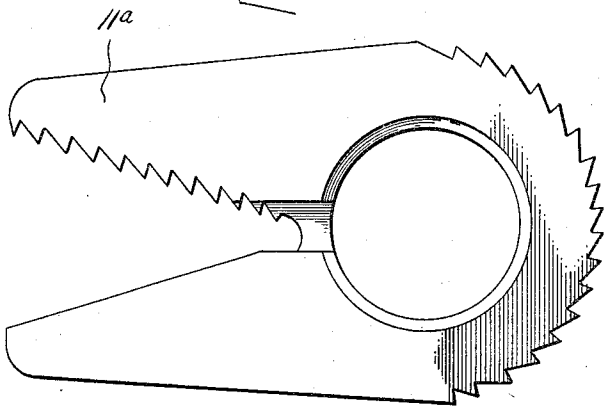


Fig. 6.

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UNITED STATES PATENT OFFICE.

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WRENCH.

1,182,652. Specification of Letters Patent. Patented May 9, 1916.

Application filed February 25, 1916. Serial No. 80,432.

To all whom it may concern:

Be it known that I, GEORGE W. DAVIS, a citizen of the United States, residing at Deport, in the county of Lamar and State of Texas, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

This invention relates to wrenches and more particularly to an improvement in wrenches of the ratchet type and it is one aim of the present invention to provide a wrench so constructed that heads of various sizes and shapes may be assembled with and readily disconnected from the stock of the wrench so as to adapt the wrench for application to nuts of various sizes and shapes and also permit of the wrench being employed as a nut or pipe wrench as may be desired.

It is one aim of the present invention to so construct the wrench that the heads thereof may be readily selectively fitted to or removed from the stock of the wrench without the necessity of loosening or removing screws or other fastening elements and in fact, without the use of tools of any kind whatsoever.

Another aim of the invention is to so construct the stock of the wrench and the heads which are employed in connection therewith that the heads will not be liable to become accidentally displaced with relation to the stock while the wrench is in use and yet the heads may be readily removed from and fitted to the stock by merely rotating the heads to a predetermined position and then sliding the same laterally from engagement with the stock in the one instance and reversing this operation in the other.

A further aim of the invention is to provide a wrench of this character with an attachment adapting the same to be employed as a socket wrench when desired.

In the accompanying drawings, Figure 1 is a perspective view of the wrench embodying the present invention, the view illustrating one form of head employed in connection with the stock of the wrench, Fig. 2 is a horizontal sectional view taken in a plane with one face of the said head, Fig. 3 is a longitudinal sectional view on the line 3—3 of Fig. 2, Fig. 4 is a group perspective view of the stock and head, these parts being disassembled, Fig. 5 is a perspective view of one member of the head, Fig. 6 is a plan view of a modified form of head, Fig. 7 is a perspective view of the attachment adapting the implement to be employed as a socket wrench.

In the drawings, the stock of the wrench is indicated by the numeral 1 and except as hereinafter described, may be of any desired shape and form. At one end, the stock 1 is provided with spaced cheek pieces indicated by the numeral 2, there being a pair of such pieces and the same having their inner faces located in parallel planes and suitably spaced to received between them the heads which are to be selectively assembled with the stock. The stock is provided with a pawl device which will now be described and which is adapted to coöperate with any one of the several ratchet heads which are to be assembled with the stock. Of this device, the pawl proper is indicated by the numeral 3 and is slidably fitted within a socket 4 formed in the stock 1 inwardly of the inner ends of the cheek pieces 2. The pawl 3 is provided with a stem 4′ which slidably fits in a reduced portion 5 of the said socket and upon which is fitted a spring 6 bearing at one end against one end of the said socket and at its other end against the shoulder formed at the juncture of the pawl and its stem, the spring tending to normally yieldably project the pawl in the direction of the outer end of the stock. A pin 7 is fitted through the pawl 3 and projects at its ends through slots 8 formed in the opposite walls of the socket 4. The projecting ends of the pin 7 by engagement with the outer end walls of the slots 8 serve to limit the movement of the pawl in the direction in which it is forced by the spring 6 and these said ends of the pin serve also as finger pieces permitting of the pawl being retracted against the tension of the spring whenever desired. The tooth of the pawl is indicated by the numeral 9 and is designed to coact with the toothed peripheries of the heads before mentioned when these heads are properly assembled with the stock.

Each of the heads above described comprises an annular body indicated by the numeral 10 which in that form of the invention shown in Figs. 1 to 4 inclusive is provided at one side with spaced fixed jaws 11 which project outwardly from the periphery of the body and lie within the plane of the opposite faces of the said body. In

that form of the invention shown in Fig. 6 of the drawings, these jaws are indicated by the numeral 11ª and are of such form that the head may be employed in the manner of an alligator or pipe wrench. It will be understood, of course, that a number of the heads 10 will be provided and that these heads shall have jaws of various forms and so spaced and shaped as to fit various sizes or pipes, nuts and other elements to be rotated and that therefore, the two forms of jaws shown in the drawings are to be considered merely as illustrative of the fact that jaws of various kinds and sizes may be employed in connection with one and the same stock. The periphery of the head 10 is provided with a series of ratchet teeth 12 with which the tooth 9 of the pawl is designed to coöperate when the head has been properly fitted between the cheek pieces 2.

By reference to the drawings and particularly to Fig. 3 thereof, it will be observed that the opposite faces of the body 10 at the inner periphery thereof are continuously beveled as indicated at 13 and that each face of the head is formed with a recess or groove 14 which is radial to the axis of the head. Rotatably disposed within the opening in the head is a centering member in the form of a circular body 15 of a diameter to fit snugly and yet freely rotatably within the said opening in the head and provided at diametrically opposite points with threaded openings or sockets 16 terminating at their outer end in countersinks 17. After the centering member has been disposed within the opening in the head, screws 18 having beveled heads 19 are fitted into the opposite ends of the openings 16 and the beveled heads of these screws will project slightly beyond the periphery of the said centering member and engage the bevels 13 of the head 10 in the manner clearly shown in Figs. 2 and 3 of the drawings. In this manner, the centering member is rotatably assembled with the head and prevented from becoming displaced with relation to the opening in the said head in which it is mounted. Each face of the centering member 15 is formed with a diametric groove 20 and these grooves are designed in either one of two positions of the centering member with relation to the head 10 to register at their ends with the grooves 14 in corresponding faces of the said head, as for example, in Fig. 2 of the drawings. The inner or opposed faces of the cheek pieces 2 are formed each with a transversely extending rib 21. These ribs extend parallel to each other and are of a length substantially equal to the lengths of the grooves 20 and the opposite edges of each of the ribs 21 are preferably beveled as are also the side walls of the grooves 20 and the corresponding walls of the grooves 14. It will now be understood that when it is desired to assemble the head with the stock, it is only necessary to rotate the centering member so as to bring one or the other of the ends of the grooves 20 into registration with the inner ends of the grooves 14 as shown in Fig. 2 whereupon the head is so positioned with relation to the stock, that the outer ends of the grooves 14 will be presented to the outer ends of the ribs 21. The head is then slid inwardly toward the stock until the ribs 21 are received wholly within the grooves 20. The centering member will then be held stationary or against rotation while the head 10 itself may have back and forth motion about the said member without, however, any likelihood of its becoming accidentally displaced with relation to the centering member or to the stock. By reversing the above described operation and sliding back the pawl 3, the head may be readily disconnected from the stock and another head substituted therefor. Obviously, the wrench will be mounted in the same manner as an ordinary ratchet wrench.

When it is desired to employ the implement in the manner of a socket wrench, the attachment shown in Fig. 7 may be assembled with the nut to be turned and the wrench applied to the said attachment in the same manner that it would be applied to the nut if the nut were in such position as to permit of the use of the wrench alone. The said attachment comprises a body 22 which is exteriorly polygonal in form and interiorly polygonal so as to fit the nut to be turned and it is preferable that the body be provided in each end with a socket 23 and that the two ends of the sockets be of different sizes so that a single attachment may be applied to two nuts of different sizes.

Having thus described the invention, what is claimed as new is:

1. In a wrench of the class described, a stock provided with spaced cheek pieces, one of said cheek pieces being provided upon its inner face with a rib, a head having an axial socket, a centering member rotatably fitted within the said socket, the said member and head being provided each with a groove and the said grooves being designed to register in a predetermined relative position of the head and centering member whereby the head and centering member may be slid into position between the cheek pieces with the said rib passing through the registering grooves and into the groove in the said centering member, and pawl and ratchet connection between the stock and head, the said head being provided with coacting jaws.

2. In a wrench of the class described, a stock provided with spaced cheek pieces, one of said cheek pieces being provided upon

its inner face with a rib, a head having an axial socket, a centering member rotatably fitted within the said socket, the head and centering member being designed to be slid into and out of position seating between the said cheek pieces and the said head and centering member being provided with grooves designed to register in a predetermined relative position of the parts and designed in a predetermined position of the parts with relation to the cheek pieces to be in alinement with the said rib, whereby to permit of such sliding insertion and removal of the said parts, coacting jaws carried by the said head, the head being provided with a peripheral ratchet portion, and a pawl carried by the stock and coacting with the said ratchet portion of the head.

3. In a wrench of the class described, a stock provided with spaced cheek pieces, each of these pieces being provided upon their opposite faces with transversely extending ribs located in parallelism, an annular head, a centering member rotatably fitted within the head, the head and said member being provided upon their opposite faces with diametrical grooves arranged to register in a predetermined relative position of the parts whereby to permit of insertion of the said head and member between the cheek pieces and their removal therefrom with the said ribs in the assembled relation of the parts seating within the grooves in the said centering member, coacting jaws carried by the said head, the head being provided upon its periphery with a series of ratchet teeth, and a pawl carried by the stock and coacting with the said ratchet periphery of the head.

4. In a wrench of the class described, a stock provided with spaced cheek pieces, a head having an axial socket, a centering member rotatably fitted within the said socket, the said head and member being removably fitted between the said cheek pieces, means for holding the member against rotation with relation to the cheek pieces, coacting jaws carried by the head, and pawl and ratchet connection between the head and stock.

5. In a wrench of the class described, a stock provided with spaced cheek pieces, a head having an axial socket, a centering member fitted rotatably within the said socket, the head being provided with a bearing portion surrounding the socket, a member removably assembled with the centering member and having a portion projecting beyond the periphery thereof and slidably coacting with the said bearing portion whereby to permit of rotation of the head with relation to the centering member, and to prevent displacement of the centering member with relation to the head, the head and centering member being fitted between the said cheek pieces of the stock, means for holding the centering member against rotation with relation to the said cheek pieces, coacting jaws carried by the head, and pawl and ratchet connection between the head and stock.

In testimony whereof I affix my signature.

GEORGE W. DAVIS. [L. S.]

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."