

J. E. McCafferty,
 WRENCH.
 APPLICATION FILED SEPT. 20, 1920.

1,412,290.

Patented Apr. 11, 1922.

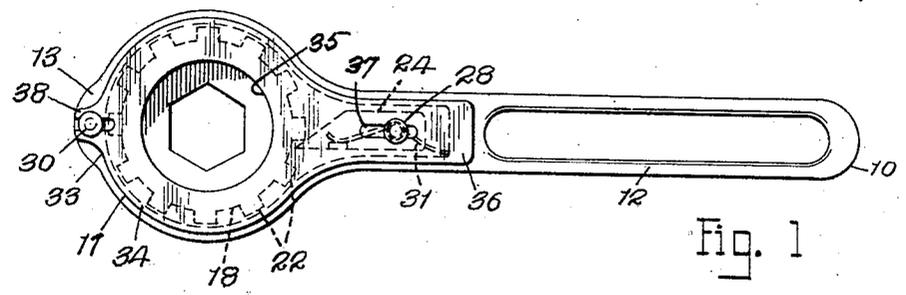


Fig. 1

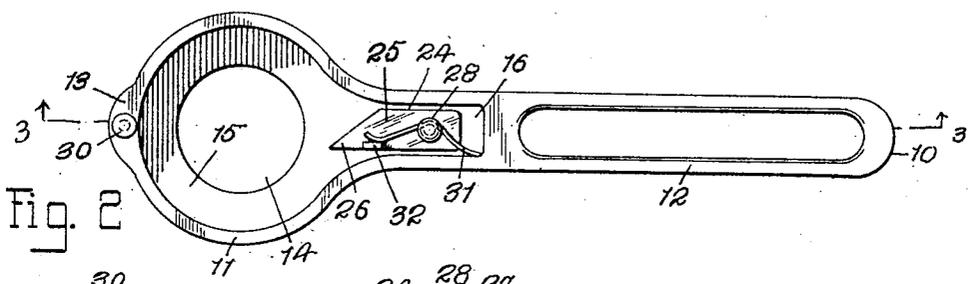


Fig. 2

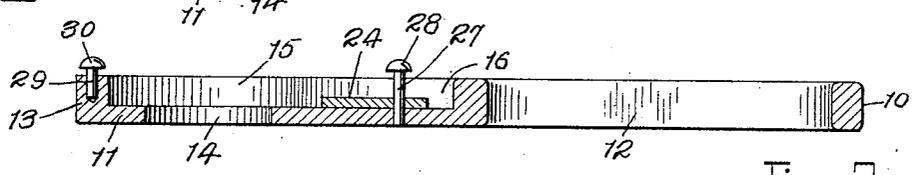


Fig. 3

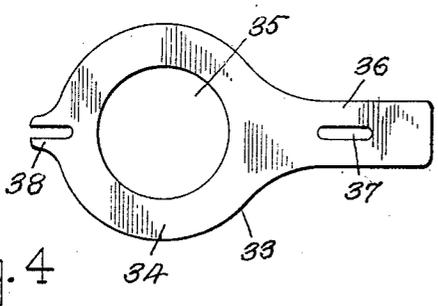


Fig. 4

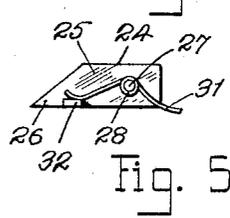


Fig. 5

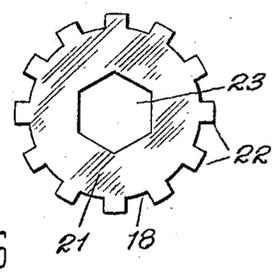


Fig. 6

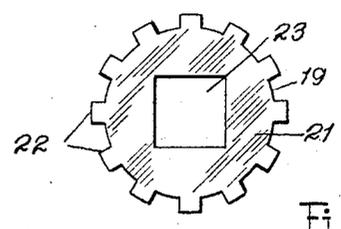


Fig. 7

Inventor
 James E. McCafferty
 By his Attorney
 M. T. Oswell

UNITED STATES PATENT OFFICE.

JAMES E. McCAFFERTY, OF NEWARK, NEW JERSEY.

WRENCH.

1,412,290.

Specification of Letters Patent. Patented Apr. 11, 1922.

Application filed September 20, 1920. Serial No. 411,622.

To all whom it may concern:

Be it known that I, JAMES E. McCAFFERTY, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in a Wrench, of which the following is a full, clear, and exact specification.

This invention relates more particularly to a class of tools.

My invention has for its object primarily to provide a wrench designed to be employed so that nuts may be readily applied to and removed from bolts, screws, pins and the like by causing each nut until it is driven home when threaded on a bolt or until it is entirely removed from the bolt without necessitating removal of the wrench from the nut, thereby overcoming the objections incident to the employment of forms of wrenches commonly used for such purposes wherein the nut is only partially rotated with each turn of the wrench as well as requiring the wrench to be frequently removed from and reapplied to the nut. This is accomplished mainly by providing a holder having a flat head with an orifice for receiving a nut, and in one face of the head is an annular recess surrounding the orifice whereby peripherally toothed interchangeable bits may be removably carried in the recess. Each of the bits has an opening arranged to register with the orifice of the head when seated in the recess of the head, and the opening of each bit is preferably angular in shape so that the nut snugly fits removably therein when inserted in the orifice of the head. On the holder is provided a retainer for detachably engaging each bit when applied in the recess to releasably hold the bit against movement when arranged on the nut so that when the holder is swung the bit will rotatably move the nut, and to the holder is pivoted a cover for being swung to open and closed positions over the recess of the head to avoid accidental displacement of the bit in the recess.

A further object of the invention is to provide a wrench of a simple, efficient and durable construction which may be made in any suitable size.

With these and other objects in view, the invention will be hereinafter more fully described with reference to the accompanying

drawing forming a part of this specification 55 in which similar characters of reference indicate corresponding parts in all the views, and will then be pointed out in the claims at the end of the description.

In the drawing, Figure 1 is a top plan of one form of wrench embodying my invention.

Fig. 2 is a top plan of the holder as well as showing a form of retainer used in the device.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a plan of the cover employed on the holder of the device.

Fig. 5 is a plan of the retainer shown in Figs. 2 and 3.

Fig. 6 is a plan of one form of toothed bit adapted to be employed in the device, and

Fig. 7 is a plan of another form of bit also adapted to be used in the device.

The device, or tool or wrench has a holder 10 which may be of any suitable size and shape, though the holder illustrated has a flat head, as 11, of preferably a substantially circular shape, and extending from part of the head 11 is a handle 12 of a length to permit the wrench to be conveniently used by a person. Protruding from part of the edge of the flat head 11 of the holder opposite to the handle 12 may be a lug or extension, as 13, and through the central part of the head is an orifice 14 of a size for removably admitting various sizes and shapes of nuts which are commonly used on screws, bolts, pins, and the like. In one face of the circular head 11 of the holder and surrounding the orifice 14 is an annular recess 15 into which the orifice 14 leads, while in the part of the handle 12 adjacent to the head may be a pocket 16 communicating with the recess 15. Adapted to be interchangeably employed removably and rotatably in the recess of the holder are bits, as 18 and 19. These bits may be of well known types, each in the form of a flat circular disk or wheel 21 having in its outer periphery spaced teeth, as 22, and in the central part of each toothed disk is an opening 23 disposed so that when each disk is arranged in the recess 15 its opening will be in register with the orifice 14 in the bottom of the recess of the head 11 of the holder. Since bolt and screw nuts vary in sizes and shapes the openings 23

of the bits may likewise vary in sizes and shapes; for example, the openings of some of the bits may be square, others may be hexagonal and others may be octagonal or still
 5 of other angular forms so that the bits will fit removably snug upon the nuts to allow the nuts to be revolved by the bits when the holder is used, as will be hereinafter more fully explained. All of the bits are of di-
 10 ameters whereby the teeth of each will be in proximity to the pocket 16 of the handle of the holder when the bit is arranged in the recess of the head 11 and serving to hold each bit releasably against accidental rotation in
 15 the recess, I provide in the pocket 16 a retainer 24.

The retainer 24 is preferably in the form of a pawl having a striplike body, as 25, with a tooth, as 26, on one of its ends. The
 20 tooth 26 of the pawl may be provided by cutting away one of the ends of the pawl on an incline, as shown, to provide somewhat a triangular shaped tooth, and the pawl is disposed in the pocket 16 of the
 25 holder so that one of the teeth of the bit in the recess 15 will engage the straight edge of the tooth of the pawl when the wrench is turned from right to left with the wrench being positioned so that the en-
 30 trances into the recess 15 and pocket 16 are disposed upwardly. The end of the pawl opposite to its tooth 26 is pivoted to the bottom of the pocket 16 by a pin or bolt 27 having a head 28. The pin 27 is
 35 of a length whereby its head is spaced above the handle 12 and above the head 11 of the holder, and projecting upwardly from the extension 13 of the head 11 is a pin or bolt 29 with a head 30 also spaced above the
 40 head as well as being on alinement with the pin 27. Serving to yieldingly hold the pawl against movement in its engagement with the bit encircling the pin 27 is a spring 31 having one of its ends in contact with a
 45 lug 32 provided on the pawl adjacent to its tooth 26, while the other end of the spring is in engagement with the wall of the pocket 16 opposite to the lug, as indicated in the drawing, and on the holder over the recess
 50 15 as well as over the pocket 16 is a cover 33 adapted to be swung to open and closed positions on the pocket and recess, besides preventing accidental displacement of the bit from the recess.

The cover 33 is preferably in the form of a flat plate having a substantially circular
 55 body part 34 of a size somewhat larger than the diameter of the recess 15 of the holder 10 so that the body portion movably rests upon the wall of the recess for closing the entrance of the recess. Through the body
 60 portion 34 is an opening 35 of a similar size to that of the orifice 14 in the bottom of the recess 15 of the holder, and extend-
 65 ing from part of the edge of the body is a

somewhat rectangular lug or finger 36 of a size and shape so that it movably rests upon the wall of the pocket 16 of the holder for closing the entrance to the pocket. In the
 70 finger 36 is a slot 37 which is elongated as well as being disposed lengthwise of the finger, and through this slot extends the part of the pin 27 which is under the head of the pin. The slot 27 is of a size so that the
 75 cover is rotatable as well as slidable on the holder 10, besides being of a width whereby the head of the pin will hold the cover on the holder 10. Projecting from part of the edge of the body portion 34 which is op-
 80 posite to the finger 36 is a fork, as 38, disposed in removable straddle arrangement on the pin 29 of the extension 13 of the head 11 of the holder under the head of this pin.

To use the wrench for applying or re-
 85 moving a nut from a bolt, pin, screw or the like, the cover 33 is slidably moved so that the prongs of the fork 38 are free of en-
 90 gagement with the pin 29, and the cover is swung on the pin 29 sidewise relative to the head 11 of the holder from closed position over the recess 15. A toothed bit of a
 95 form suitable to rotate the nut is placed in the recess 15 so that the retainer or pawl 24 is in engagement with one of the teeth of the bit, and the cover is then swung to a
 100 closed position on the holder over the recess 15, besides being moved to a releasably locked position by its fork 38 engaging the pin 29. When it is desired to screw the
 105 nut home the nut is passed into the opening of the bit after it has been previously passed through the orifice 14 of the bottom of the recess 15 the wrench being positioned so that the cover 33 is on top of the recess of the holder 10, and by swinging the wrench
 110 continuously for the required period from left to right or by releasing the engagement of the pawl with the bit at intervals by intermittently moving the wrench reversely and then reswinging it from right
 115 to left the nut will be driven home on its bolt, or pin or screw. When it is desired to loosen the nut the wrench is held with the cover 33 disposed toward the nut. The nut is passed through the opening 35 of the
 120 cover and then disposed in the opening of the bit, after which by swinging the wrench from right to left in a manner similar to threading the nut, the nut will be removed from its bolt, or pin without requiring the
 125 tool to be frequently removed from and re-applied to the nut as is incident to using the ordinary types of wrenches.

In the foregoing description, I have em-
 125 bodied the preferred form of my invention, but I do not wish to be understood as limit-
 130 ing myself thereto as I am aware that modifications may be made therein without departing from the principle or sacrificing
 135 any of the advantages of this invention,

therefore I reserve to myself the right to make such changes as fairly fall within the scope thereof.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

As an article of manufacture, a wrench comprising a handle having a head on one end thereof provided with an annular socket in one side thereof, said socket having an opening in its base, a ratchet disk removably and rotatably disposed within the socket and having an angular opening therethrough for the reception of a nut, said handle having a pocket in one side communicating at one end with the socket, a pawl having one of its ends inclined and disposed with this end in engagement with teeth of the ratchet disk to prevent rotation thereof in one direction, a headed pin carried by the handle and passing transversely of the pocket and having the pawl

mounted thereon for pivotal movement in said pocket, a spring having its central portion coiled about said pin with one end engaging the pawl and the other end engaging a wall of the pocket, a second headed pin carried by the outer end of the head, a retaining plate for the ratchet disk having an elongated slot through which the first named pin projects for slidably and pivotally securing said plate to the side of the head and handle, said retaining plate having a fork on its outer end removably straddling said second named pin when the plate is disposed to cover the ratchet disk and pawl and having an opening alined with the opening in the base of the socket.

This specification signed and witnessed this 15 day of September A. D. 1920.

JAMES E. McCAFFERTY.

Witnesses:

J. FRANK,

J. FREDERICK CRYER.