

No. 854,174.

PATENTED MAY 21, 1907.

J. N. NOYER.  
RATCHET WRENCH.  
APPLICATION FILED MAY 17, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

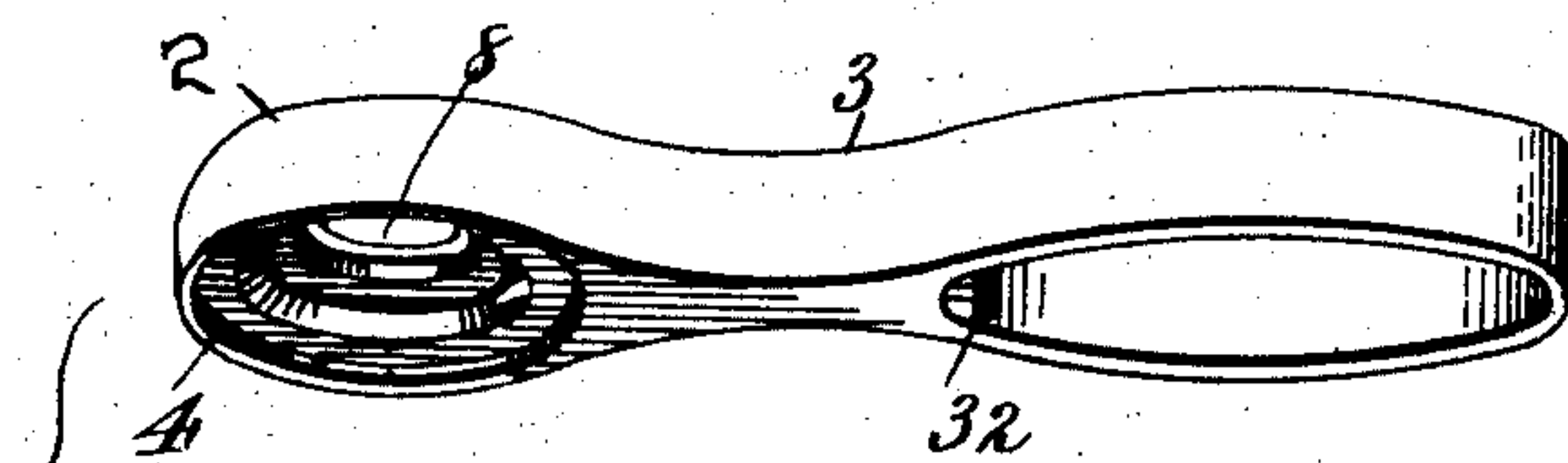
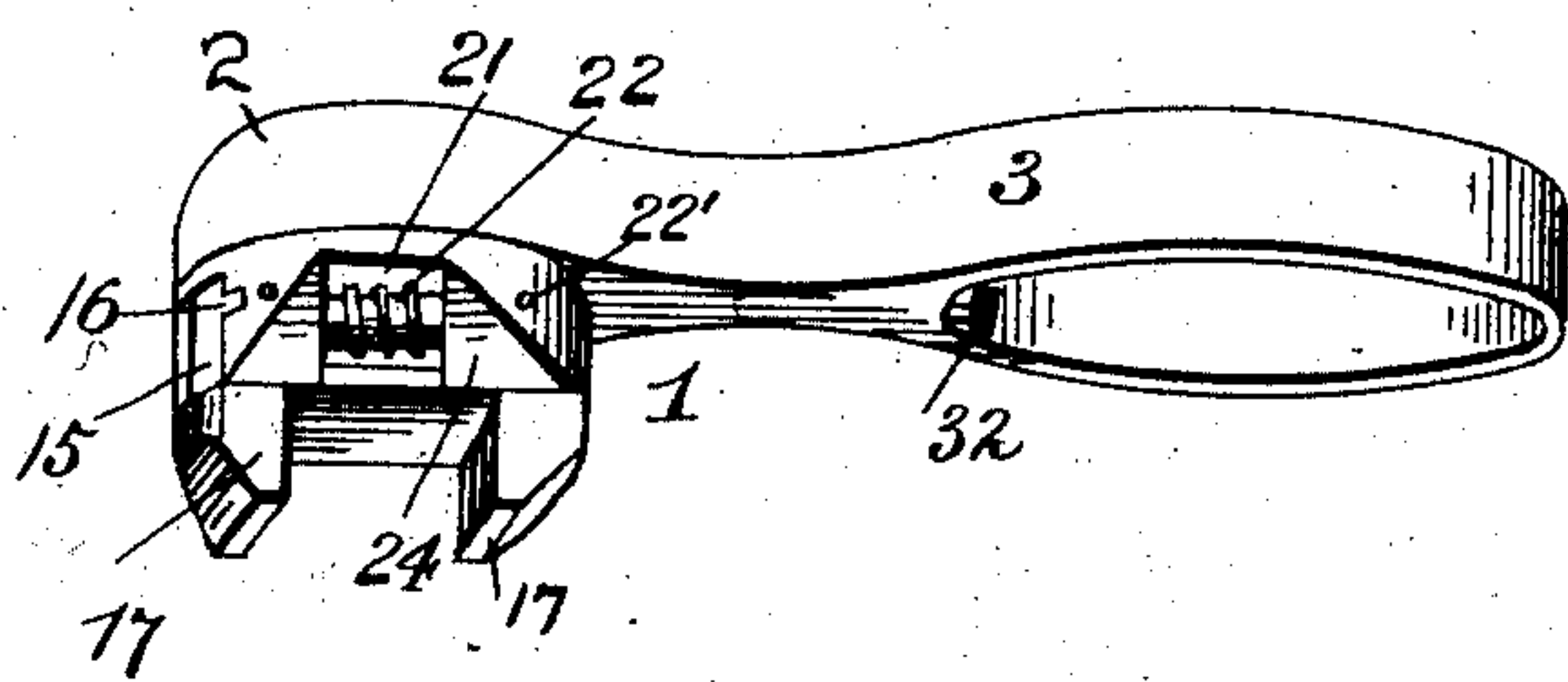


Fig. 2.

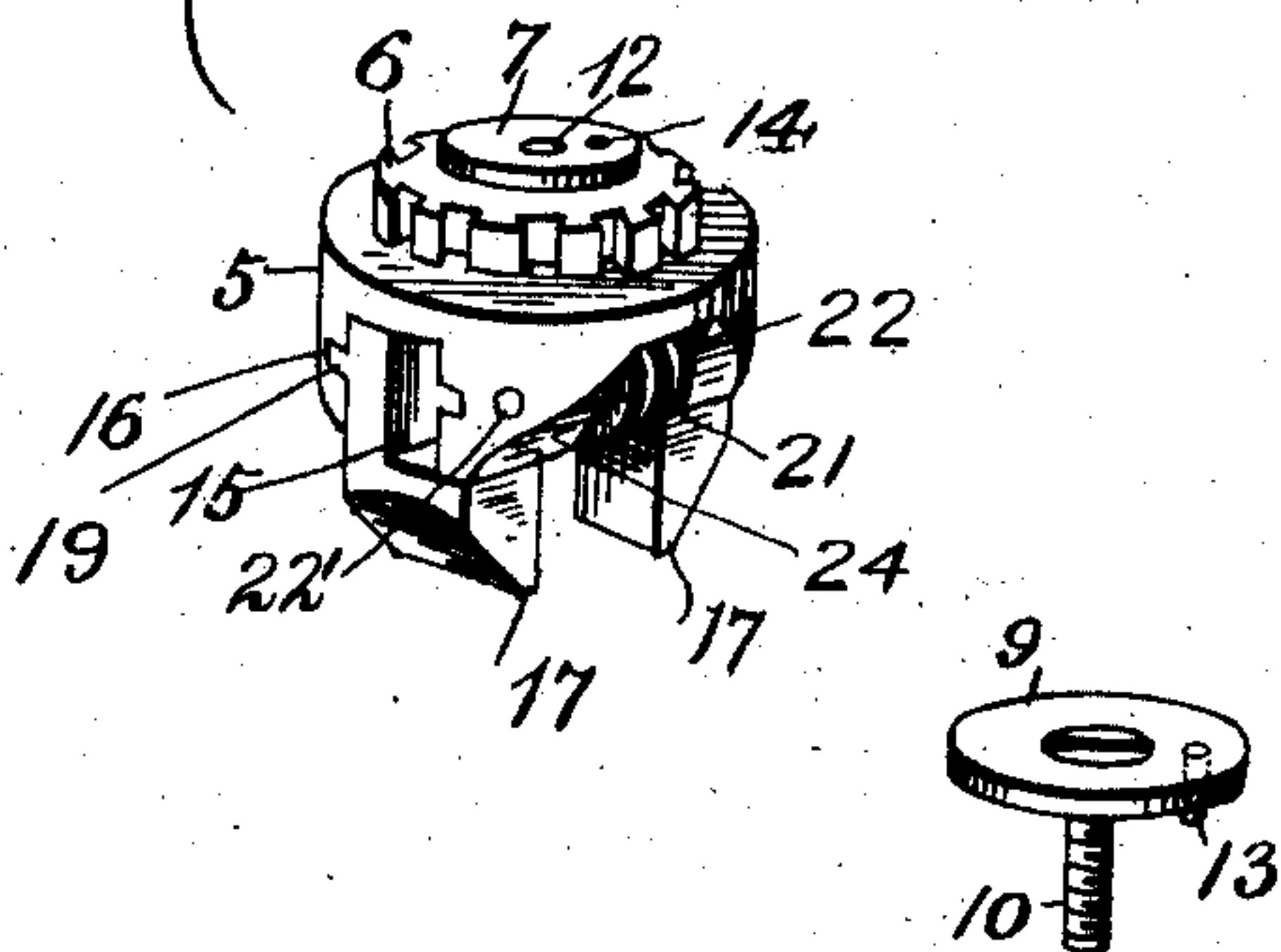
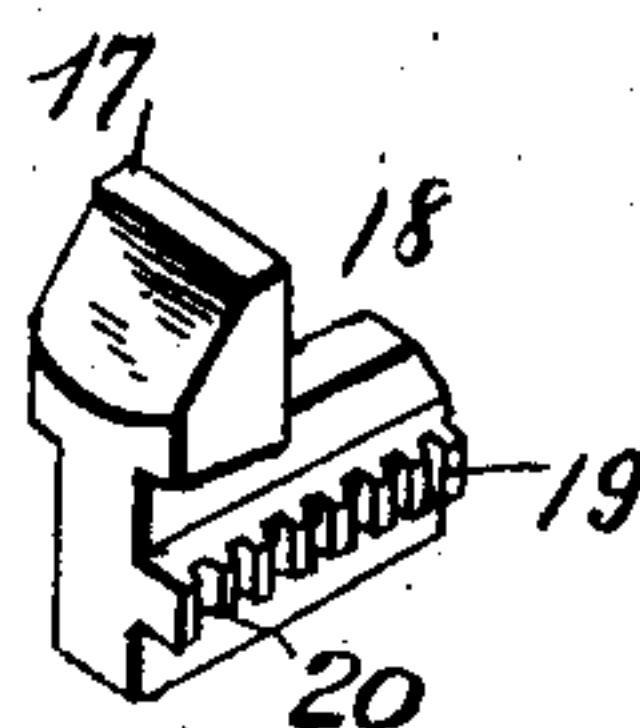


Fig. 5.



Witnesses  
J. L. Ourand  
C. H. Griesbauer

Joseph N. Noyer  
Inventor

by *A. B. Wilson & Co.*  
Attorneys

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2 SHEETS—SHEET 2.

Fig 3.

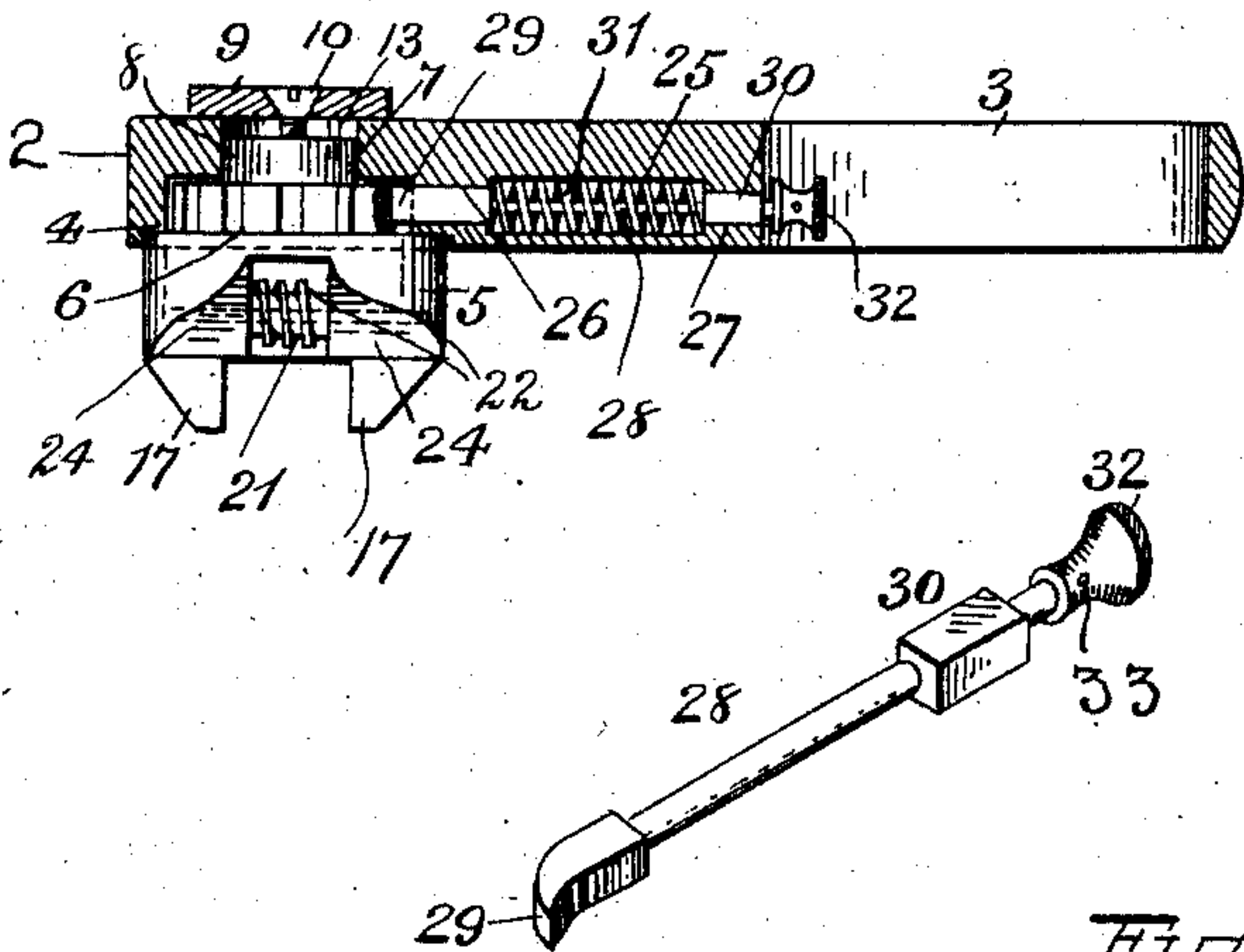


Fig 4

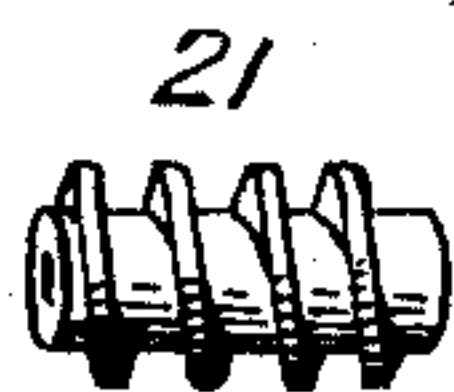


Fig. 6.

Inventor  
Joseph N. Noyer.

Witnesses  
F. L. Curand  
C. H. Griesbauer

334  
A. B. Wilson & Co  
Attorneys.



# UNITED STATES PATENT OFFICE.

JOSEPH N. NOYER, OF GOULD CITY, WASHINGTON.

## RATCHET-WRENCH.

No. 854,174.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed May 17, 1906. Serial No. 317,366.

*To all whom it may concern:*

Be it known that I, JOSEPH N. NOYER, a citizen of the United States, residing at Gould City, in the county of Garfield and State of Washington, have invented certain new and useful Improvements in Ratchet-Wrenches; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in ratchet wrenches.

The object of the invention is to provide a wrench of this character having means whereby the jaws may be quickly adjusted to fit various sizes of nuts and means whereby the pawl may be quickly reversed, thus providing for the operation of the wrench in either direction.

A further object is to provide a wrench of this character which will be simple, strong and durable in construction, efficient in operation and well adapted to the purpose for which it is designed.

With the above and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be hereinafter described and claimed.

In the accompanying drawings:—Figure 1 is a perspective view of a wrench constructed in accordance with the invention; Fig. 2 is a similar view, showing the parts of the wrench separated; Fig. 3 is a longitudinal sectional view through the wrench; Fig. 4 is a detail, perspective view of the operating pawl; Fig. 5 is a similar view of one of the jaws; and Fig. 6 is a similar view of one of the worm gears for operating said jaws.

Referring more particularly to the drawings, 1 denotes the wrench, which consists of a stock 2 having a hollow or open handle 3. In the stock 2 of the wrench is formed a cylindrical bearing socket 4, in which is revolubly mounted a cylindrical head 5, on the upper end of which is formed a ratchet wheel 6 having a centrally disposed upwardly-projecting boss or stub shaft 7, which when the head is in place in the socket 4 is adapted to project through a bearing opening 8 in the stock, as shown. Arranged on the outer side of the wrench above the opening 8 is a cap or retaining plate 9, in which is formed a centrally-disposed aperture, through which is inserted a retaining screw 10 adapted to be

screwed into a threaded aperture 12 formed in the boss or shaft 7 and the head 5. The cap or retaining plate 9 is provided on its under side with a laterally projecting pin 13, which is adapted to enter a hole 14 in the boss 7, thereby preventing the unscrewing of the head 5 from the screw 10 when the wrench is in use. The cap or retaining plate 9 is of greater diameter than the opening 8, so that the head will be revolubly held thereby in the socket 4.

The lower portion of the head 5 is provided with a transversely-disposed passage 15, in the side walls of which are formed longitudinally-disposed guide grooves or channels 16. Slidably mounted in the passage 15 are the jaws 17 which are provided with integral, right-angularly-projecting shanks 18. The shanks 18 are offset or arranged adjacent to one end of the jaws and are provided on their outer faces with laterally-projecting, longitudinally-disposed guide ribs or tongues 19 which are adapted to be engaged with the grooves or channels 16 in the walls of the passage 15 in the head of the wrench, thereby supporting said jaws in sliding engagement with said head.

The ribs or tongues 19 have formed therein a series of worm teeth 20, which are adapted to be engaged by independently operable worms 21 that are arranged in recesses 22 formed in the opposite sides of the head 5 and are revolubly mounted upon bearing rods or shafts 22' arranged in said head, as shown. The threads of the worms are preferably serrated or milled to enable the same to be turned by the thumb or finger of the operator. The sides of the head 5 adjacent to the recesses 22 are cut away or beveled, as shown at 24, to further facilitate the engagement of the worms 21 by the thumb or finger of the operator. When either of the worms 21 is turned in one direction or the other, the sliding jaw will be reciprocated in either direction to the exclusion of the other jaw, thus to adjust the jaws to various sizes of nuts.

In the body of the wrench between the socketed end and the handle 3 is arranged a longitudinally-disposed cylindrical recess 25, at one end of which is reduced to form a rectangular guideway 26 which communicates with the socket 4 in line with the ratchet teeth 6 on the head 5, and the other end of which is reduced to form a rectangular guideway 27 which communicates with the open



or hollow handle 3. Slidably mounted in the recess 25 and the guideways 26 and 27 is a spring-projected bar or bolt 28, the outer end of which is provided with a rectangular, beveled tooth-engaging pawl or ratchet 29, while adjacent to the inner end is formed a rectangular enlargement constituting a guide-block 30, the pawl 29 and guide block being adapted respectively to engage the guideways 26 and 27. On the bar 28 between the pawl 29 and the guide-block is arranged a coil spring 31, said spring being adapted to lie in the recess 25 in the body of the wrench. One end of the spring 31 is adapted to engage the inner end of the pawl 29, while the other end of the spring engages the adjacent end of the recess 25, thereby projecting or forcing the bar outwardly and the pawl into engagement with the ratchet teeth of the head 5. The end of the bar beyond the guide-block 30 projects into the hollow or open handle 3, and has secured thereto a head 32, that is held in place on said end by means of a cotter pin 33 or other suitable fastening device. The head 32 serves to limit the outward movement of the bar and also provides a grip by means of which the bar may be drawn inwardly against the tension of the spring to disengage the pawl 29 and the guide-block from the guideways 26 and 27, when the bar may be turned to reverse the position of the pawl, after which the head is released and the spring permitted to force the pawl back to an operative position, thereby providing for the operation of the wrench in either direction, as will be understood. It will be noted by reference to Fig. 1 that the head 32 is entirely housed in the hollow of the handle, so that it is positively shielded from possibility of injury as by being struck, or from the wrench being dropped, and this is a feature of importance and one that imparts added utility to the implement.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

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

1. In a wrench of the character described, the combination with a stock having a bearing socket and a handle, of a cylindrical head arranged in said socket, means to hold said

head therein, jaws adjustably mounted in a transversely-disposed passage in said head, worm teeth formed on said jaws, independently-operable worms adapted to engage said worm teeth, a ratchet wheel arranged on said head, and a spring projected reversible pawl adapted to be engaged with said teeth to turn said head in one direction or the other, substantially as described.

2. In a wrench of the character described, the combination with a stock having a bearing socket and a handle, of a cylindrical head revolubly mounted in said socket, means to retain said head in place, nut-engaging jaws slidably mounted in said head, right angularly-projecting offset shanks formed on said jaws to slidably engage a guide passage in said head, toothed ribs formed on said shanks to engage longitudinal guide grooves formed in the walls of said passage, independently-operable worms adapted to engage the toothed ribs of said shanks to adjust the jaws and a spring-projected reversible pawl mounted in the body of said wrench to engage teeth on said head, whereby the same is operated in one direction or the other, substantially as described.

3. In a wrench of the character described, the combination with a stock having a bearing socket, and a recessed open handle, of a cylindrical head revolubly mounted in said socket, means to retain said head in place, nut-engaging jaws slidably mounted in said head, right angularly projecting offset shanks formed on said jaws to slidably engage a guide passage in said head, toothed ribs formed on said shanks to engage longitudinal guide grooves formed in the walls of said passage, independently operable worms adapted to engage the toothed ribs of said shanks whereby said jaws may be adjusted, a bar slidably mounted in a recess in the body portion of said wrench and carrying a pawl, a coil spring arranged on said bar to normally project the pawl into engagement with ratchet teeth on said head, and a head secured to the end of said bar and housed within the handle, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH N. NOYER.

Witnesses:

ATTWOOD A. KIRBY,  
GERTRUDE FITZSIMMONS.