June 2, 1931. C. W. HELBLING 1,808,350

RATCHET WRENCH

Filed March 23, 1928

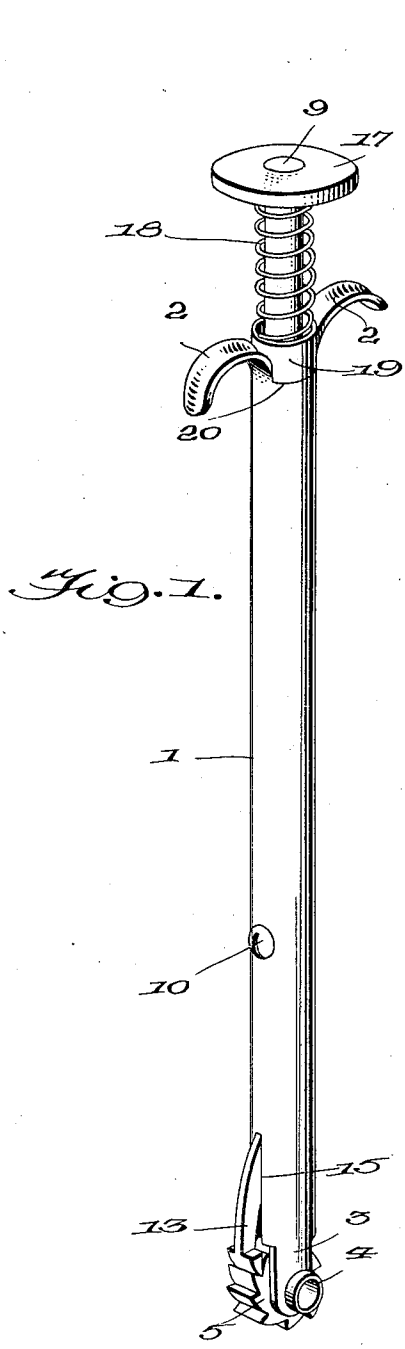


Fig. 1.

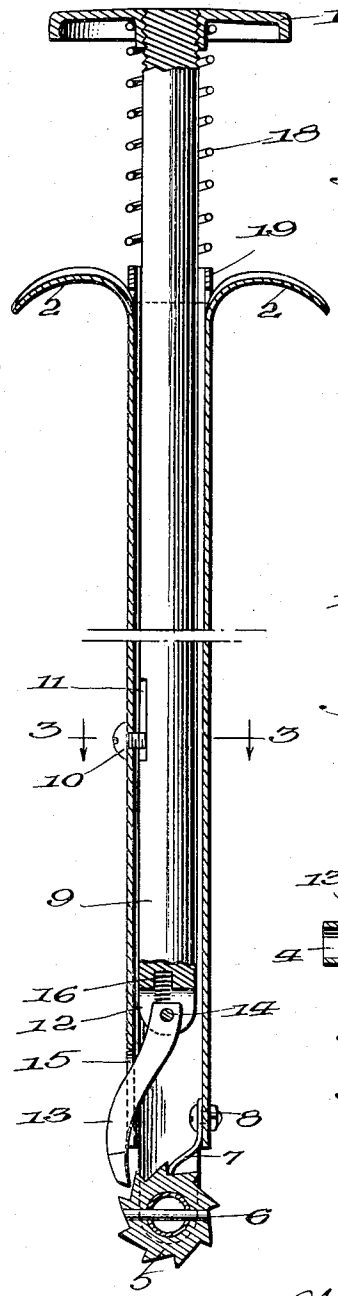


Fig. 2.

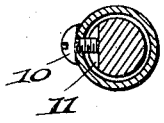


Fig. 3.

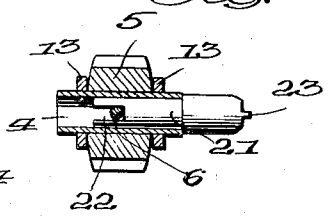


Fig. 4.



Fig. 5.

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UNITED STATES PATENT OFFICE

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RATCHET WRENCH

Application filed March 23, 1928. Serial No. 264,198.

This invention relates to an improvement in ratchet wrenches.

The object of the invention is to provide a wrench of this character of simple construction and easy of operation, so that it may be operated with one hand. The wrench is particularly devised for the purpose of repairing and tightening the ball cock found on the inside of a water closet, either for removing or tightening the screws or for repairing the ball cock itself. For this purpose, the wrench is so constructed as to receive attachments, which may act either as a screw driver or as a wrench for this tightening operation.

In the accompanying drawings:

Fig. 1 is a perspective view of the wrench;

Fig. 2 is a longitudinal sectional view therethrough;

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

Fig. 4 is a transverse sectional view through the ratchet wheel showing one form of attachment; and

Fig. 5 is a similar view showing another form of attachment.

The numeral 1 indicates a casing which terminates at its inner end in the handles 2 and at its outer end in the fingers 3, in which is journaled a sleeve 4 upon which a ratchet wheel 5 is secured by means of a pin 6, which extends through the ratchet wheel and sleeve, as clearly shown in Fig. 2.

A spring pawl 7 is mounted within the casing 1 by means of a bolt 8, the free end of the pawl 7 extending into position to engage the teeth of the ratchet wheel 5.

A rod 9 is loosely mounted within the casing 1, being slidable therein, having its sliding movement limited, however, by a screw 10, which is carried by the casing 1 and extends into a groove 11 formed in a side of the rod 9. The outer end of the rod 9 terminates in ears 12, between which an arm 13 is pivoted as at 14, and extends outwardly through a notch 15 formed in the outer end of the casing 1, in position to engage the teeth of the ratchet wheel 5. A spring 16 is interposed between the inner end of the arm 13 and a recess formed in the outer end of the rod 9 for normally tending to hold the arm 13 in engagement with the teeth of the ratchet wheel.

The inner end of the rod 9 has a hand disk 17 secured thereto to act as a handle and to enable the operator to obtain a hold on the rod. A spring 18 is interposed between the disk 17 and a sleeve 19, which fits into the notches 20 in the inner end of the casing 1, and said spring normally tends to retract the rod 9 and to draw the arm 13 back in position to engage another one of the teeth 5.

The sleeve 4 is open or hollow throughout its length, as shown clearly in Fig. 4, and the pin 6 extends transversely across the sleeve, and an attachment 21 has a recess 22 formed in one end thereof so as to receive the pin 6 and to lock the attachment 21 to the pin and ratchet wheel when the attachment is received within the hollow sleeve 4, to cause a turning of this attachment upon the rotation of the ratchet wheel. This attachment 21 terminates at its outer end in a screw driver 23 for engaging the groove of a screw to turn the latter. The attachment 24 shown in Fig. 5 is similar to the attachment 21, except that at its outer end it is provided with a notch 25, which is intended to fit around a protruding portion of a screw or other member for obtaining engagement therewith to rotate the latter.

The operation of the instrument is very simple. It is only necessary for the operator to grasp the handles 2 with two of his fingers, the disk 17 being seated in the palm of his hand, and by exerting pressure upon the disk against the tension of the spring 18 the rod 9 is moved longitudinally through the casing 1, having its movement limited by the screw 10 and the arm 13 being held in engagement with the teeth of the ratchet wheel 5 by the spring 16, longitudinal movement of the rod 9 causes a longitudinal movement of the arm 13, which turns the ratchet wheel 5. This ratchet wheel is held against movement in the opposite direction by the spring pawl 7, which is normally in engagement with the teeth thereof.

By intermittently releasing and then applying pressure to the disk 17 the ratchet wheel may be intermittently rotated. Either

one of the attachments may be inserted in the sleeve 4 or, in fact, this sleeve may serve to receive and turn various other attachments which may be used in connection with the wrench. When the attachment is inserted, the wrench may be applied to the object to be turned and the turning movement imparted thereto.

The invention is particularly developed for loosening or tightening screws in making repairs on the ball cock found inside of a water tank, although it may be applied to various other purposes as may be found desirable.

It is simple in construction and operation and very effective in use.

I claim:—

1. A wrench of the character described including a casing, a sleeve journaled in said casing and having a ratchet wheel secured thereto, means for rotating the ratchet wheel and sleeve, and a pin for securing the sleeve and ratchet wheel together and extending into the open center portion thereof for receiving an attachment which extends at an angle to the wrench.

2. A wrench of the character described including a casing, having a sleeve journaled in the outer end thereof, a ratchet wheel secured to said sleeve, means to cause a rotation of the ratchet wheel and sleeve, and a pin securing the ratchet wheel and sleeve together and extending across the open portion of the sleeve in position to receive a wrench attachment to cause a rotation thereof upon the rotation of the sleeve and ratchet wheel, said attachment being secured approximately at right angles to the wrench.

3. A wrench of the character described including a tubular casing, a sleeve extending transversely of said casing and journaled therein, a ratchet gear mounted on said sleeve, actuating means for said ratchet gear, a pin extending transversely across the sleeve and securing said sleeve and gear together, and a tool having a slotted end to be inserted into the sleeve and embrace the pin for actuation thereby.

4. A wrench of the character described comprising a casing, a sleeve extending transversely of the length of the casing and rotatably mounted therein, a gear secured to the sleeve, operating means for the gear, and a pin securing the gear and sleeve together and extending transversely of the sleeve to receive a slotted tool when said tool is inserted transversely of the casing.

5. A wrench of the character described comprising a casing, a sleeve extending transversely of the length of the casing and rotatably mounted therein a gear secured to the sleeve, operating means for the gear, a pin securing the gear and sleeve together and extending transversely of the opening in and fixed to the sleeve, and a tool having a slotted end to be inserted into the sleeve and embrace the pin, to mount said tool for operation approximately at right angles to the wrench.

6. A wrench of the character described comprising a casing, a sleeve journaled in the casing, a gear fixed on the sleeve, operating means for the gear to rotate the sleeve, said sleeve being hollow to receive a wrench attachment, and a pin extending transversely across the hollow sleeve and into the gear for securing the gear and sleeve together, and to be engaged by the attachment for causing a turning thereof upon rotation of the sleeve.

In testimony whereof I affix my signature.

CLARENCE W. HELBLING.