(Model.)

A. J. BARBER.

WRENCH.

No. 417,968. Patented Dec. 24, 1889.

Fig. 1.

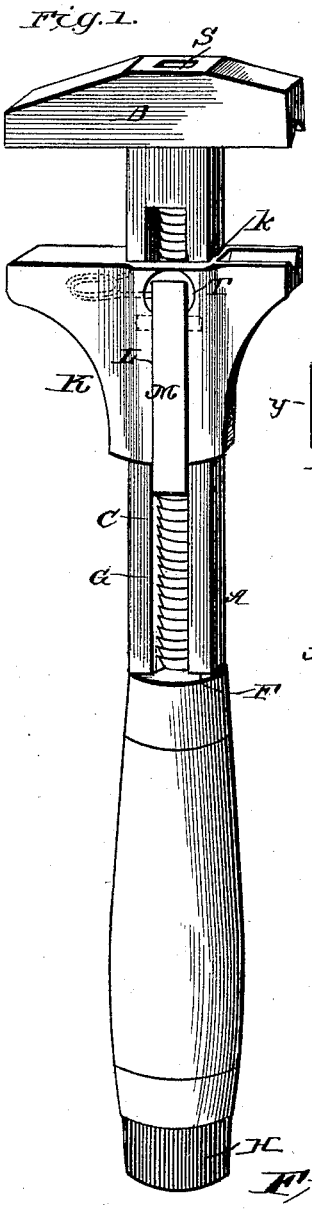


Fig. 2.

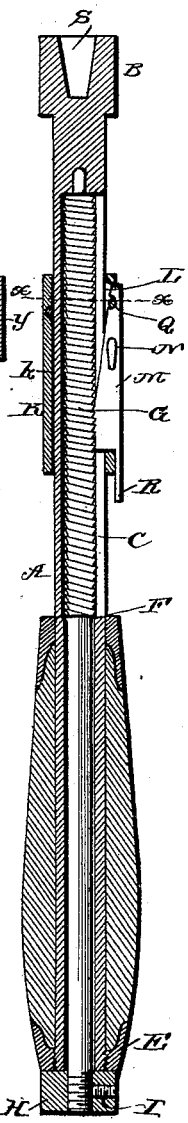


Fig. 3.

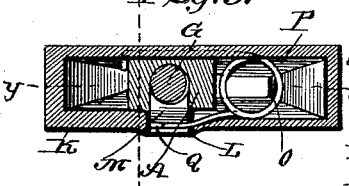


Fig. 4.

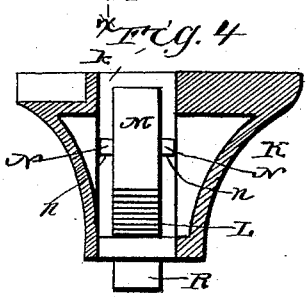


Fig. 5.

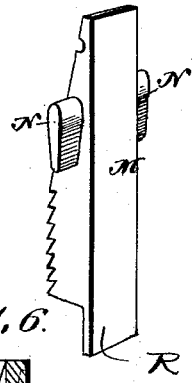
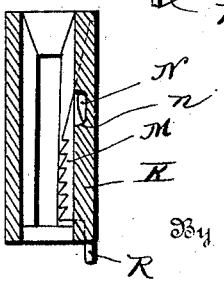


Fig. 6.



Witnesses

Jos. A. Ryan

C. E. Doyle.

Inventor

Arthur J. Barber

By his Attorneys

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

ARTHUR J. BARBER, OF AUBURN, ASSIGNOR OF ONE-HALF TO CHARLES D. GAYLORD, OF SODUS, NEW YORK.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 417,968, dated December 24, 1889.

Application filed May 9, 1888. Serial No. 273,288. (Model.)

To all whom it may concern:

Be it known that I, ARTHUR J. BARBER, a citizen of the United States, residing at Auburn, in the county of Cayuga and State of New York, have invented a new and useful Improvement in Wrenches, of which the following is a specification.

My invention relates to improvements in wrenches; and it has for its object to provide a device combining simplicity, strength, and convenience, in which the adjustment of the movable jaw will be rapidly and at the same time accurately accomplished.

In the ordinary practice wrenches having threaded operating-rods are so constructed as to expose the rod, and the result is that the threads soon become injured by the rough usage to which the tool is subjected and the operating of the movable jaw is rendered difficult. In the improved wrench the operating-rod is mounted in a groove in the side of the shank and is thus protected, and the various parts of the wrench, although being detachable, are so connected as to render accidental displacement impossible.

The invention consists in a certain novel construction and arrangement of devices, fully set forth hereinafter in connection with the accompanying drawings, wherein—

Figure 1 is a perspective view of the wrench. Fig. 2 is a central vertical sectional view taken transversely. Fig. 3 is a transverse horizontal sectional view on the line *x x* of Fig. 2. Fig. 4 is a longitudinal vertical sectional view of the movable jaw on the line *y y* of Fig. 3. Fig. 5 is a detail perspective view of the ratchet-plate. Fig. 6 is a detail sectional view on the line *x x* of Fig. 3.

Referring by letter to the drawings, A designates the shank of the wrench, on the upper end of which is arranged the rigid jaw B, and C represents a groove which is formed in the side of the shank. The lower end of the shank is threaded, and after the handle is adjusted thereon the ferrule E is engaged on the said threaded portion and the handle is clamped against the shoulder F on the shank.

G represents the operating-rod, which is mounted in the groove in the shank, extends the entire length of the same, and projects a short distance beyond the lower end of the shank. The milled nut H is engaged on the threaded projecting end of the said rod, and is clamped thereon by the small set-screw I, which is mounted in the side of the nut. The portion of the operating-rod which is within the handle is smooth or plain and the portion which is above the handle is threaded, for a purpose hereinafter explained.

The sliding jaw K is provided with an opening *k*, which embraces the shank, and a vertical slot L in the side of the jaw aligns with the groove C in the shank. A ratchet-plate M is arranged in the slot L, and is provided with the lateral trunnions N N, which are mounted in bearings *n n* on opposite sides of the slot L, and the lower threaded end of the said ratchet-plate engages the threads of the operating-rod, for a purpose to be explained. It will be seen that the bearings *n n* are formed in the inner side of the jaw, and in order to mount the trunnions N therein it is necessary to pass the ratchet-plate up through the opening *k* in the jaw, and therefore when the shank is in place in the opening *k* the ratchet-plate cannot become detached or displaced. The threads on the operating-rod of the ratchet inclined upward prevent the movable jaw from being forced down, and the trunnions are arranged slightly above the threads of the ratchet-plate, to be directly in line with the strain when the effort is made to force the jaw down. The outer side of the plate M is flush with the outer side of the movable jaw, and in order to enable its upper end to be depressed to disengage its lower end from the threads on the operating-rod a shallow depression T is formed in the side of the jaw under the upper end of the plate.

The ratchet-plate is designed to be normally held in engagement with the operating-rod, and to attain this object a coiled spring O is arranged in a recess P in the movable jaw and bears at one end in a horizontal groove in the inner side of the plate near its upper end, and at the opposite end in a horizontal groove in the opposite side of the opening *k*, as shown in dotted lines in Fig. 3. This spring presses the upper end of the ratchet-plate outward, and consequently holds its lower end in engagement with the operat-

ing-rod, and the ear R, which is formed on the lower end of the ratchet-plate, bears on the lower end of the slot L in the jaw, and prevents the said plate from being pressed too tightly against the operating-rod.

It will be observed that the bearings *n n* are merely depressions in the vertical bore of the movable jaw, and the vertically-elongated trunnions N N rest flat in the depressions. The advantages of this construction are that the plate M is loose when the lower jaw is removed from the shank, and the trunnions are capable of withstanding a great strain while occupying but little space in the thickness of the jaw.

The wrench which is shown in the drawings is provided with double jaws, those on one side being plain, while those on the other side are notched to receive the angles of the nut to be turned. The upper side of the rigid jaw is provided with an angular socket S, which is adapted to receive the shank of a screw-driver or other similar tool.

The operation of the wrench being evident from the above description, it will be unnecessary to further enlarge on the same herein.

The advantages are as follows: The movable jaw may be moved toward the rigid jaw by sliding the same up the shank without rotating the operating-rod, (the ratchet-plate sliding idly over the threads of the said operating-rod,) and it may be moved from the same by depressing and consequently disengaging the ratchet-plate. After sliding the jaw up the shank, and thus approximately adjusting the same, it may be accurately adjusted by rotating the operating-rod.

The various detachable parts of the wrench are so connected that they cannot be accidentally separated, and the threaded operating-rod is concealed within the groove in the shank, so that it is protected from injury.

It will be seen that the improved wrench combines the advantages of the ratchet and screw wrenches, in that the rapid adjustment of one is united with the accuracy of the other.

The milled nut is attached to the lower end of the operating-rod at the outer end of the handle in the drawings; but it may be arranged on the said rod at the inner end of the handle, so that it can be turned with the thumb and forefinger of the hand which grasps the handle.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

In a wrench, the combination, with the grooved shank having a rigid jaw thereon, and the threaded operating-rod G, mounted wholly within the groove of the shank, of the jaw K, sliding on the shank and having the slot L in its side aligning with the groove, and the bearings *n n* on opposite sides of the slot, the ratchet-plate M, of the construction shown, arranged in said slot and having integral trunnions N, mounted in the bearings *n n*, and the spring housed in a recess R in the jaw and bearing against the upper end of the ratchet-plate, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

ARTHUR J. BARBER.

Witnesses:

CHARLES D. GAYLORD,

FRANK POUCHER.