(No Model.)

D. C. WIEST.

WRENCH.

No. 488,158. Patented Dec. 13, 1892.

Fig. 2.

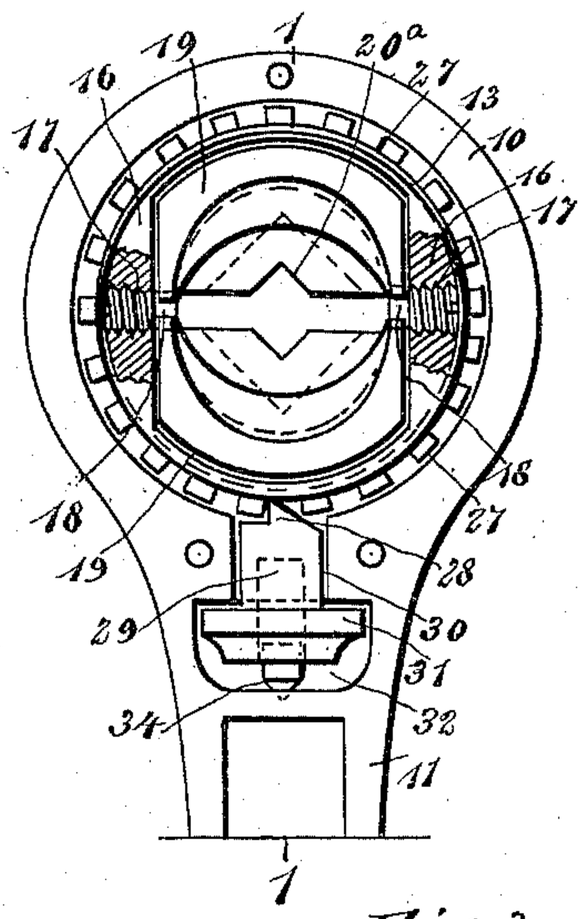


Fig. 1

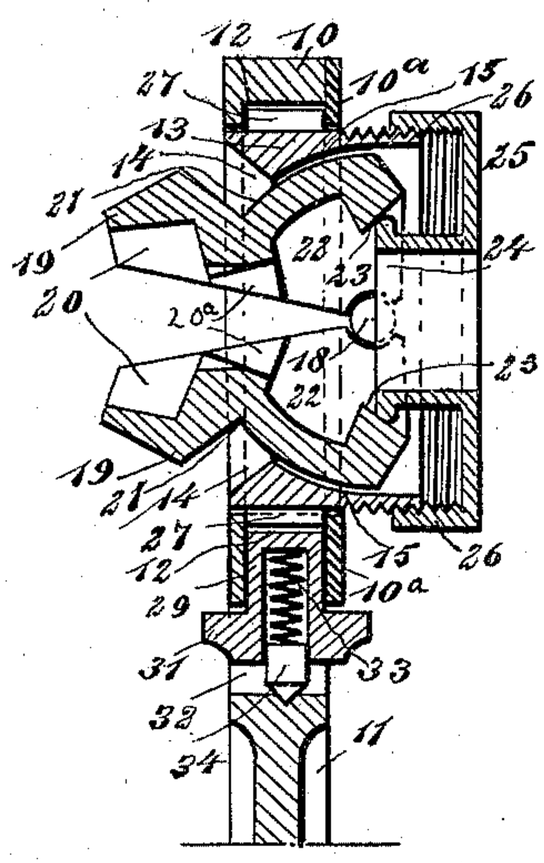


Fig. 4

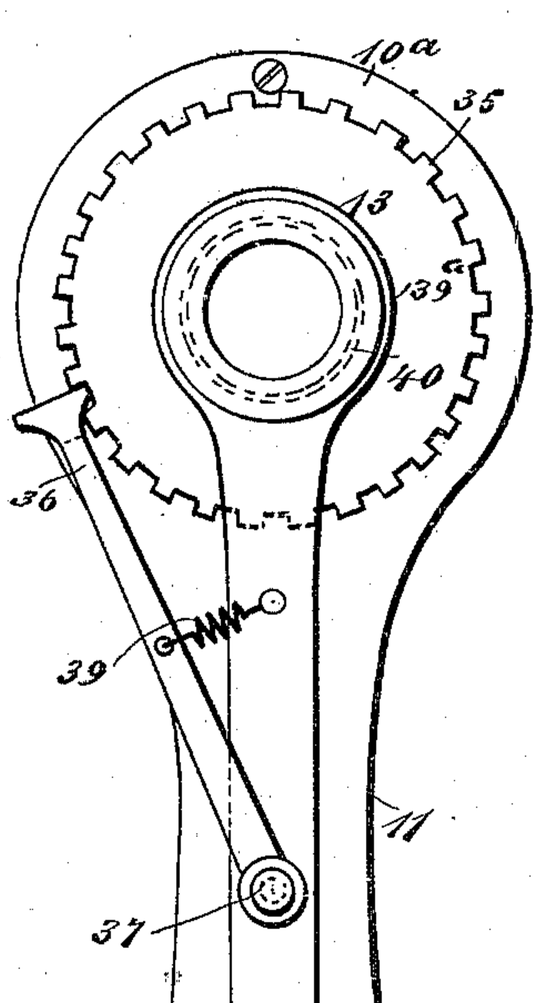


Fig. 3

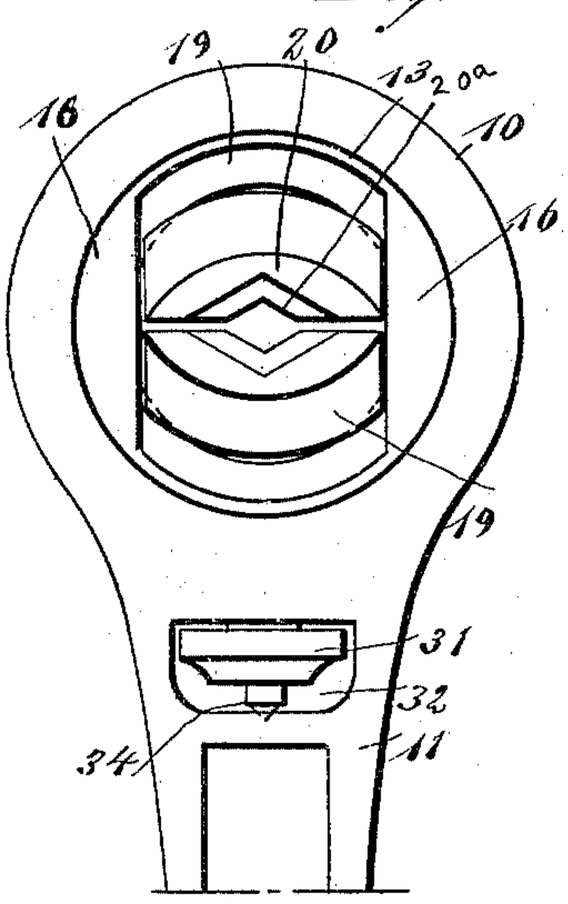


Fig. 5

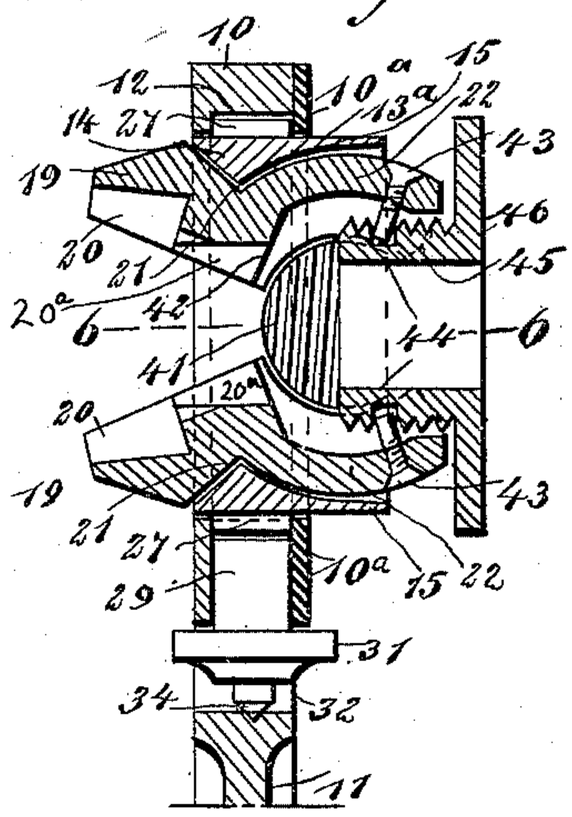
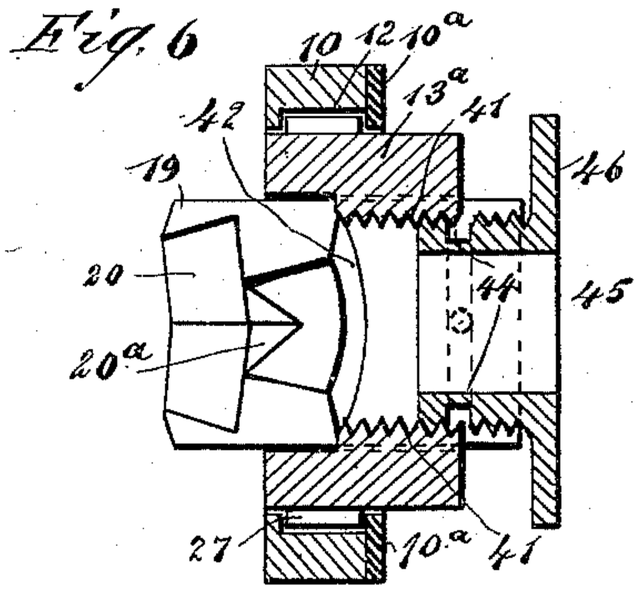


Fig. 6



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WRENCH.

SPECIFICATION forming part of Letters Patent No. 488,158, dated December 13, 1892.

Application filed March 8, 1892. Serial No. 424,151. (No model.)

To all whom it may concern:

Be it known that I, DANIEL C. WIEST, of Mohrsville, in the county of Berks and State of Pennsylvania, have invented a new and Improved Wrench, of which the following is a full, clear, and exact description.

My invention relates to improvements in wrenches; and the object of my invention is to produce a simple, strong, and durable ratchet-wrench which may be easily adjusted to nuts of various sizes, which may be conveniently operated, and which is provided with improved means for changing the ratchet, so that the wrench may be used as either a right or left hand wrench.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a broken longitudinal section on the line 1 1 in Fig. 2. Fig. 2 is a broken rear elevation of the wrench-head, partly in section and with the cover-plate removed. Fig. 3 is a broken face view of the wrench. Fig. 4 is a face view of the wrench provided with a modified means of turning the jaws. Fig. 5 is a longitudinal central section of the modified form of the wrench, and Fig. 6 is a cross-section on the line 6 6 in Fig. 5.

The wrench is provided with a head 10, having a central circular aperture therein, and the head merges at one side into a shank 11, which may be elongated to form a handle, as shown in Fig. 4, or which may be attached to a handle. The wrench-head 10 has an interior circumferential recess 12, in which the teeth of the jaw-holding nipple are held, and on the back side of the head is a detachable plate 10^a, which facilitates the insertion and removal of the several parts. The wrench is provided with a revoluble jaw-holding nipple 13, which is held to turn in the aperture of the wrench-head, and this nipple is provided with a flaring mouth 14 and with a tapering rear portion 15, which is of circular cross-section and which assists the action of the jaws, as described below.

The jaw-holder 13 is thickened longitudinally and on opposite sides, as shown at 16 in Figs. 2 and 3, to increase its strength and to form bearings for the screws 17, which extend transversely through the thickened parts 16 and which have their inner ends rounded and made to protrude from the said thickened portions, these rounded ends 18 of the screws serving as bearings for the oscillating jaws 19, which are held opposite each other in the holder 13 and which protrude from the face of the wrench, the jaws having their outer ends provided with square sockets 20 to fit a nut, their middle portions reduced, as shown at 21, so as to fit the projecting part of the jaw-holder 13, formed by the oppositely-inclined walls 14 and 15, and the inner ends or bases of the jaws are enlarged and rounded, so as to fit the tapering wall 15 of the jaw-holder 13. The jaws have also sockets 20^a in their middle portions, these sockets being adapted to receive a bit, so that the wrench may be used instead of a ratchet bit-brace. The inner edges of the bases 22 of the jaw-holder are cut away, as shown in Fig. 1, so that they may fit nicely upon the rounded ends 18 of the screws 17. The bases have inwardly-extending flanges 23, which are made somewhat flaring, as best shown in Fig. 1, and which engage an annular and inwardly-extending flange 24 on the cap 25, which is screwed to the exteriorly-threaded portion of the jaw-holding nipple or jaw-holder 13, the back end of the latter being made to project from the wrench-head, so as to facilitate the adjustment of the cap 25, and the cap having an interiorly-threaded flange 26 to fit the thread of the jaw-holder. It will be seen that by screwing the cap 25 upon the threaded end of the jaw-holder 13 the flange 24, acting on the bases 22 of the jaws, will oscillate the jaws on the screws 17, the bases of the jaws following the taper of the jaw-holder, and the front ends of the jaws will be forced together, so as to be clamped upon a nut, and by unscrewing the cap 25 the action will be reversed and the jaws allowed to separate.

On the outer wall of the jaw-holder 13 and near its front end are teeth 27, which are held to revolve in the recess 12 of the head 10, and these teeth are adapted to be engaged by a tooth 28 on an oscillating pawl 29, which is held in a recess 30 of the wrench-head and at one side of its central aperture, the pawl being placed parallel with the shank 11, and the pawl terminates at its outer end in a milled wheel 31, by means of which it may be revolved, this wheel being held in a recess 32 of the shank 11. The tooth 28 of the pawl 29 is inclined on one side, so that the teeth 27 may slip over it easily in one direction; but the tooth has a shoulder on the opposite side, which will prevent the movement of the teeth in the opposite direction; but by turning the pawl over the inclination of the tooth 28 will be reversed and the ratchet mechanism may be adjusted to turn either to the right or left. The pawl 29 is normally pressed forward, so as to engage the teeth 27 of the jaw-holder, by a spring 33, which is held in a longitudinal recess of the pawl and between the inner end of the pawl and a guide-block 34, which enters the recess and which bears upon the rear wall of the recess 32, as shown in Figs. 1 and 2.

The jaws 19 may be adjusted upon a nut by means of the cap 25, as described above, and to turn the nut the wrench is turned continuously in one direction or is turned back and forth, and in this case when turned in one direction the tooth 28 and pawl 29 will cause the jaw-holder and jaws to be turned forward; but when turned in the other direction the tooth will slip out of engagement with the teeth 27, so as to permit the easy and successful working of the wrench.

In Fig. 4 I have shown a means of adjusting the cap 25, and consequently the jaws, and in this case the back end of the cap 25 is provided with teeth 35, which are adapted to engage a pawl 36, pivoted at its outer end, as shown at 37, to a lever 38, which extends parallel with and along the back side of the handle or shank 11, and the pawl is held in engagement with the teeth by a spring 39, which connects it with the lever 38. The lever 38 has its pivoted end formed into a ring 39^a, which is held to turn on a hub 40 of the cap, and by moving the lever and permitting the shank 11 to remain stationary the cap may be moved and the jaws tightened or loosened, as desired. As shown in Fig. 4, which illustrates this mechanism, the wrench is provided with the jaws and ratchet similar to those shown in Figs. 1 to 3, and described above, except that the pawl 29 is very much elongated, and the milled head 31 and recess 32 are arranged near the center of the handle instead of near the head 10 of the wrench.

In Figs. 5 and 6 I have shown another modified means of adjusting the jaws. Here the jaw-holder 13 is substantially as described above; but the exterior screw-thread is dispensed with and the jaw-holder 13^a has its opposite back walls thickened and interiorly threaded, as shown at 41, these thickened portions being rounded, so as to form a segment of a circle, as shown in Fig. 5, and the jaws 19 have their inner edges shaped to fit the thickened portion of the jaw-holder, as shown at 42 in Fig. 5, and the jaws may thus easily oscillate on the thickened portions. As shown in Figs. 5 and 6, the cap 25 is dispensed with and the jaws have their inner oval ends 42 provided with screws 43, which project inward and engage an annular groove 44 in a nut or cap 45, which is adapted to enter the jaw-holder, and is threaded to fit the threaded parts 41 of the jaw-holder, the cap having a base-flange 46, by means of which it may be turned. It will be seen that by turning the cap 45 in or out it will operate on the screws 43 and bases 22 of the jaws, so as to open or close the jaws, as desired.

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

1. A wrench comprising a handle having an apertured head, a revoluble jaw-holder mounted in the head and having a ratchet connection therewith, jaws pivoted in the jaw-holder and projecting therefrom, and a cap having a screw connection with the jaw-holder and adapted to operate the jaws, substantially as described.

2. A wrench comprising an apertured head adapted to be secured to a handle, a jaw-holder held to turn in the head and having a ratchet connection therewith, the jaw-holder having a flaring mouth and a tapering inner wall, a pair of oscillating jaws pivoted in the jaw-holder and projecting therefrom, the jaws being shaped to fit the inner wall of the jaw-holder, and a screw-cap mounted on the back end of the jaw-holder and adapted to operate the jaws, substantially as described.

3. A wrench comprising an apertured head, a jaw-holder held to turn in the head and having a shifting ratchet connection therewith, the jaw-holder having a flaring mouth and a tapering inner wall, a pair of oscillating jaws held in the jaw-holder and shaped to fit the wall thereof, and a screw-cap held to turn on the back end of the jaw-holder and having an engagement with the jaws, whereby the latter may be opened and closed by the movement of the cap, substantially as described.

4. In a wrench, the combination, with a handle having an apertured head, of a jaw-holder mounted in the head and having a ratchet connection therewith, jaws pivoted in the jaw-holder, a cap having a screw connection with the jaw-holder and adapted to

operate the jaws, and a pawl-and-ratchet mechanism for operating the cap, substantially as described.

5. In a wrench, the combination, with a handle having an apertured head, of a jaw-holder mounted in the head and having a screw-threaded extension, a pawl-and-ratchet mechanism for turning the jaw-holder, jaws pivoted in the said holder, and a screw-cap screwed on the extension of the jaw-holder and provided with an inwardly-extending flange engaging the jaws, substantially as herein shown and described.

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Witnesses:
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