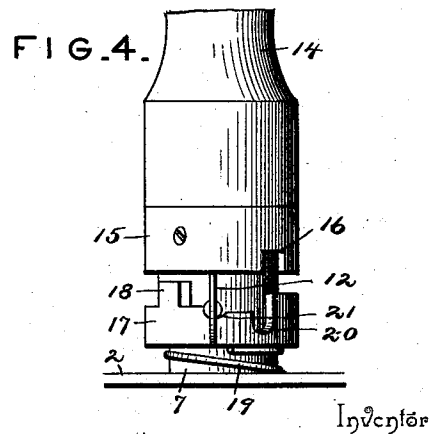
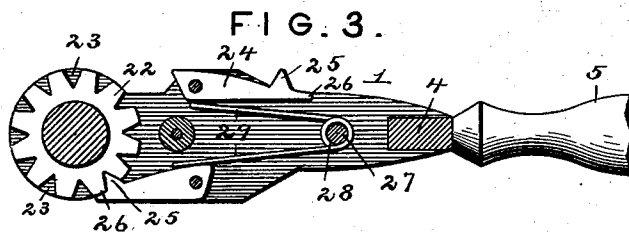
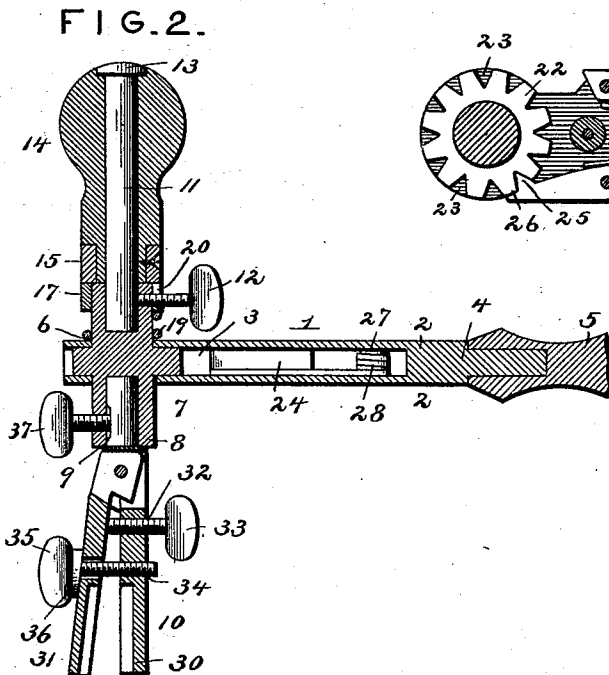
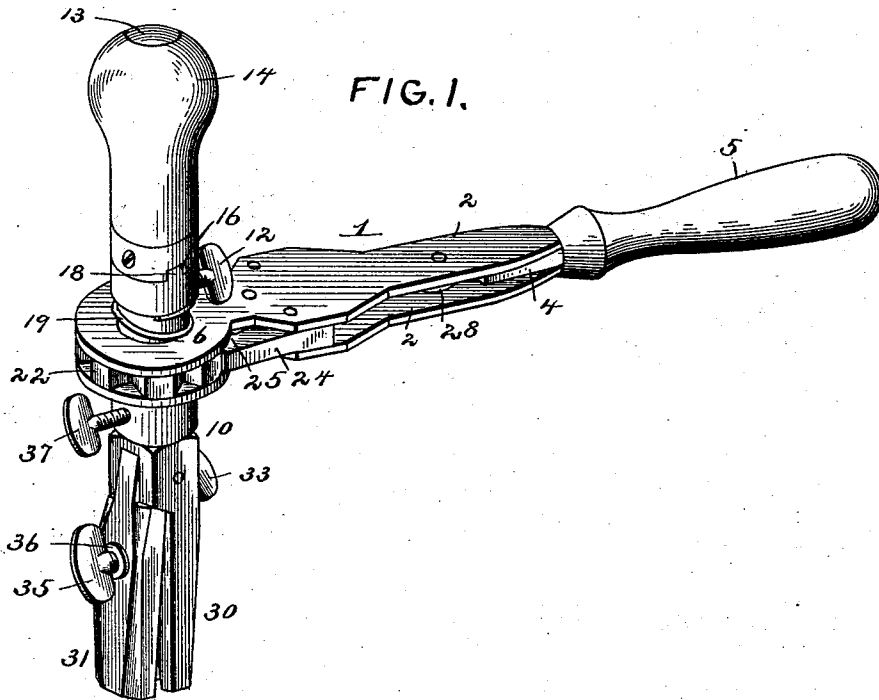


(No Model.)

M. D. SCHALLER.
RATCHET WRENCH.

No. 508,845.

Patented Nov. 14, 1893.



Witnesses

Harry L. Amer.
[Signature]

By his Attorneys.

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THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MICHAEL D. SCHALLER, OF LOWELL, NEW YORK.

RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 508,845, dated November 14, 1893.

Application filed August 4, 1893. Serial No. 482,372. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL D. SCHALLER, a citizen of the United States, residing at Lowell, in the county of Oneida and State of New York, have invented a new and useful Ratchet-Wrench, of which the following is a specification.

My invention relates to improvements in ratchet wrenches, and it has for its object to provide a construction whereby bits of different kinds and for different purposes may be attached, and whereby other adjustments may be made to enable the tool to be used in different capacities.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings: Figure 1 is a perspective view of a wrench embodying my invention adjusted for the manipulation of nuts. Fig. 2 is a central longitudinal sectional view. Fig. 3 is a plan view partly broken away. Fig. 4 is a detail side view of the hand-rest and clutch.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates the stock, comprising twin parallel plates 2, which are spaced apart to form a cavity 3, and are connected securely at their outer ends to a tang 4, upon which is secured the handle 5. Said twin plates are provided at the opposite end from the handle with registering bearings 6, in which is mounted the hollow shaft 7, one end of which forms a chuck 8, to receive the stem 9 of a bit holder 10. In the upper portion of the hollow shaft 7 is fitted a spindle 11, held in place by means of a set-screw 12, and headed at its upper end, as shown at 13. Upon this spindle is rotatably mounted the hand-rest 14, provided at its lower end with a ferrule 15, having a peripheral notch 16, the lower end of said hand-rest bearing upon the upper end of the hollow shaft. Slidably mounted upon the portion of the hollow shaft which projects above the upper plate of the stock is a clutch 17, provided with a tooth or detent 18, adapted to engage the notch 16, of the hand-rest, and interposed between the upper

plate of the stock and said clutch is an actuating spring 19, which is coiled around the hollow shaft. The clutch is provided in its upper edge with a notch 20, which is adapted, when in alignment with the set-screw 12, to receive the same and thus allow the clutch to be elevated by its actuating spring to cause the engagement of the detent or tooth with the notch in the hand-rest, and connected with the notch 20, is a cam-slot or cut-away portion 21, which may be engaged with the set-screw 12 by repressing the clutch against the tension of its actuating spring and turning the same upon the hollow shaft. In this way the clutch is locked out of operative position and the hand-rest is free to rotate upon the spindle. The hollow shaft is provided, between the planes of the upper and lower twin plates, with a ratchet 22, consisting of a solid disk provided with spaced V-shaped notches 23, and pivotally connected to the stock, adjacent to the said ratchet and upon opposite sides of the former, are the pawls 24, provided with cam-faced inner or pivoted ends and having V-shaped terminal noses 25, to engage the V-shaped notches of the ratchet; small finger-holes 26 being arranged at the free ends of the pawls to lie upon the surface of the ratchet when the V-shaped noses are in engagement therewith and designed to facilitate the manipulation of the pawl when it is desired to throw them back to their inoperative positions. Coiled upon a transverse pin 27, near the outer end of the stock and between the twin plates, is a spring 28, having the free terminal arms 29, which engage respectively the cam-faced pivotal ends of the pawls to hold the latter either in their operative or inoperative positions. It will be seen that as the pawls are of a width to fit between the twin plates of the stock they may be turned back and received between said plates when not in use, thus avoiding the necessity of a clutch or other mechanism for maintaining one of the pawls in its inoperative position while the other is in use.

In order to avoid the use of two ratchets, in which the teeth are pitched or inclined in opposite directions, I employ a single ratchet provided with peripheral V-shaped notches the sides of which are beveled equally, and pawls having wedge-shaped noses which are

beveled equally upon both sides. By this construction a common ratchet is controlled by either pawl and permitted to rotate in either direction according to the pawl which is in engagement therewith. The ratchet cannot turn toward the pawl which engages with its notches for the reason that said pawl terminates short of a transverse line extending through the axis of the ratchet, and the pressure of the side of the notch in the ratchet against the outer surface of the nose of the pawl is directly toward the pivot of said pawl, as will be seen by reference to Fig. 3 of the drawings.

The bit holder which I have shown in connection with the improved wrench comprises a fixed jaw 30 and a movable jaw 31, which is pivotally connected to the fixed jaw, both being provided with V-shaped notches to engage the angles of a nut or bolt-head. Mounted in a threaded perforation 32 in the fixed jaw is a spacing thumb-screw 33, which is adapted to impinge at its extremity against the inner surface of the pivoted jaw, and rotatably mounted in the pivoted jaw and engaging a threaded perforation 34, in the fixed jaw, is a locking thumb-screw 35, having a collar 36 to bear against the outer surface of the pivoted jaw. By this construction the locking thumb-screw may be loosened, provided it is desired to open the jaws, and the spacing thumb-screw may be turned to spread the jaws to the desired extent, after which the locking thumb-screw may be tightened to cause the pivoted jaw to bear firmly against the extremity of the spacing screw. The stem of the bit holder is locked in the chuck by means of the set-screw 37.

It will be understood that auger, screw-driving, and other bits provided with a part corresponding with the stem 9 may be fitted in the chuck in place of the bit holder (adapted for use as a wrench) which I have illustrated in the drawings, thus giving to the tool a wide range of utility; furthermore, that all of the parts of the tool are detachable to enable them to be repaired or replaced when necessary, and that the operating parts are exposed to view and therefore readily accessible for manipulation; and furthermore, that the hand-rest is adapted to be locked securely to the hollow shaft to turn therewith, and of being released to rotate freely upon its spindle, such spindle being detachable with the hand-rest when required to reach an otherwise inaccessible object.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. The combination with a stock having twin parallel plates of a shaft rotatably mounted in bearings in the said plates a ratchet, fixed to the shaft between said plates and having V-shaped peripheral notches, the sides of which are equally beveled, bit-securing devices carried by the shaft, and spring-pressed pawls pivotally connected to the stock between the parallel plates and arranged when not in use to fold between the plates, said pawls having wedge-shaped noses of equal bevel upon both sides, and being arranged to engage the ratchet short of a transverse line embracing the axis of the ratchet, or between the said transverse line and the pivotal points of the pawls, whereby a single ratchet is controlled by either pawl to permit rotation in opposite directions, substantially as specified.

2. The combination with a stock, a shaft rotatably mounted upon the stock and provided with a chuck, and means for communicating motion from the stock to the shaft, of a bit holder having a stem to fit in said chuck and comprising a fixed jaw and a movable jaw, pivoted at one end to the fixed jaw a spacing thumb-screw threaded in the fixed jaw to impinge against the inner surface of the movable jaw, and a locking thumb-screw loosely mounted in the movable jaw and threaded in the fixed jaw, between the spacing thumb-screw and the free ends of the jaws substantially as specified.

3. The combination with a stock, a bit-carrying shaft rotatably mounted upon said stock, and means for communicating motion from the stock to the shaft, of a hand-rest rotatably mounted upon the shaft, and a clutch adapted to engage the hand-rest to lock the same against rotation, substantially as specified.

4. The combination with a stock, a bit-supporting shaft rotatably mounted upon the stock, and means for communicating motion from the stock to the shaft, of a hand-rest rotatably mounted upon a spindle carried by the shaft and in axial alignment therewith, and a clutch loosely mounted upon the shaft contiguous to the lower end of the hand-rest and provided with a tooth or detent to engage a notch in the hand-rest and a slot or cut-away portion to engage a projection upon the shaft to hold said tooth or detent out of engagement with the notch in the hand-rest, said clutch being provided with an actuating spring, substantially as specified.

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

MICHAEL D. SCHALLER.

Witnesses:

R. D. BOYD,
WILLIAM A. BOYD.