H. T. GATES.

Combined Wrench and Vise.

No. 198,291. Patented Dec. 18, 1877

Fig. 1

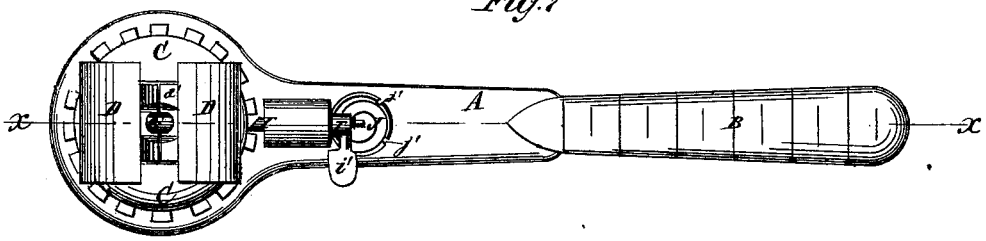


Fig. 2.

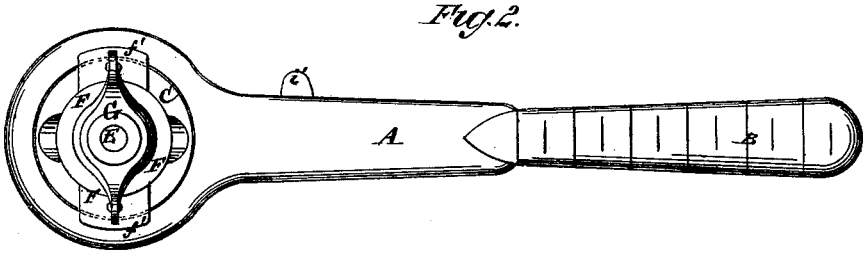
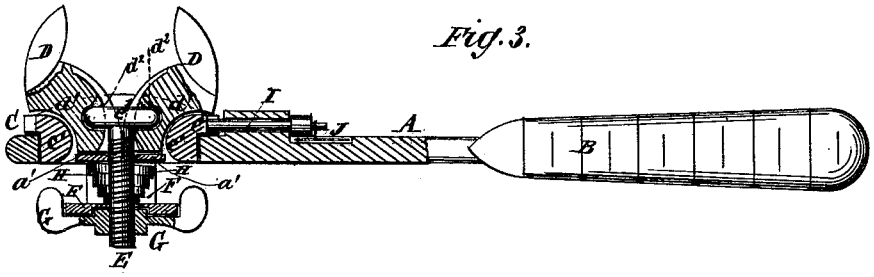


Fig. 3.



WITNESSES:

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HOMER T. GATES, OF HARTFORD, OHIO.

IMPROVEMENT IN COMBINED WRENCH AND VISE.

Specification forming part of Letters Patent No. **198,291**, dated December 18, 1877; application filed October 23, 1877.

To all whom it may concern:

Be it known that I, HOMER TOMPSON GATES, of Hartford, in the county of Trumbull and State of Ohio, have invented a new and Improved Combined Wrench and Vise, of which the following is a specification:

The invention will first be described in connection with the drawing, and then pointed out in claims.

In the accompanying drawing, Figure 1 represents a top view of this my improved wrench. Fig. 2 is a view of the under side of the same; and Fig. 3 is a longitudinal section of the same, taken through the line *x x* of Fig. 1.

Similar letters of reference indicate corresponding parts.

A is the lever of the wrench. The handle thereof I provide with ring-marks B, at distances apart to serve as measures of inches and fractions thereof.

C is a ratchet-wheel turned down, below the teeth, to a smaller diameter, by which it is made to fit in a hole through the ratchet end of the wrench-bar A. The ratchet C has an oblong hole through its center, and the rim thus formed is rounded off at the ends c' of said opening, for the reception of the circular necks d' of the vise-jaws.

The jaws D are connected by the two ends of the elongated head e' of the threaded bolt E, said bolt passing through the center of the ratchet-wheel C, between the jaws, and thence through a bridge, F, secured to the under side of the ratchet, and extending, with its two ends, f', beyond the diameter of the same, to form the lower flange of the ratchet, for holding it in place in the hole of the bar A, the teeth being part of the upper flange.

The ends of the bolt-head e' engage in notches or cavities d^2 in the necks d^1 of the jaws D, and the bolt E is provided with a hand-nut, G, working against the outside of the bridge F.

H is a spiral spring surrounding the bolt E, between the inside of the bridge F and the lower ends of the jaw-necks d^1, a washer, a', being inserted between the necks and the spring for the latter to work against.

A turning inward of the nut G will pull down the bolt E, turning the circular necks d^1 upon their bearings c', and contract the vise or close the jaws D, thereby compressing the spring H. In unscrewing the nut G the spring H will expand, raise the bolt E, and open the jaws.

It is evident that by this construction a bolt-head, a nut, a screw, or any other object within the grasp of the jaws D may be securely clamped by them by turning the nut G, and held, as in a vise for bench-work, the vise being completed by simply inserting the handle A in an auger-hole or socket made for the purpose.

In order to make the vise-jaws D accomplish the work of a screw-wrench it is only necessary to cause the ratchet C, in which they are secured, to revolve by an oscillating movement of the handle. This is done by fitting a sliding pawl, I, in a lug formed on or attached to the bar A, said pawl being pushed to engage with the teeth of the ratchet-wheel C by a coiled spring, J, which is held by the little lugs j' in a small socket on the surface of the lever A, and retained from being pushed out too far by a shoulder formed on the pawl, and butting against the end of the lug in which it slides.

The end of the pawl which engages with the ratchet-wheel is beveled on one side, so as to slide over the teeth without causing any movement of the wheel C during the return movement of the lever A—that is, when the lever, having been vibrated to move the wheel forward, is thrown back to take a new hold on the teeth.

i' is a small handle attached to the pawl I, and by which the pawl can be turned around one half turn and reversed, and the ratchet-wheel and jaws revolved by the movement of the lever A in the opposite direction. As the oscillating movement of the pawl for the small space of one tooth only will revolve the ratchet-wheel an equal space, it is evident that this tool can be used for the purpose of a wrench in places inaccessible to the use of wrenches, as heretofore constructed, thus making it a wrench of far greater range and usefulness than they. The wasting of time by the tedious shifting of the wrench after each stroke is also avoided, as it is only necessary to clamp

the bolt, nut, or screw in the vise-jaws, and then operate the handle in the same manner as that of a ratchet-drill.

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

1. The vise-jaws D, fitted to turn, with their necks d^1, upon suitable bearings or surfaces c' of the ratchet-wheel C, and connected to work together by the head e' of the bolt E, operated by the nut G, or its equivalent, substantially as and for the purpose described.

2. The spring H, surrounding the bolt E, and interposed between the bridge F and the ends of the circular necks d^1 of the jaws D, as and for the purpose specified.

HOMER TOMPSON GATES.

Witnesses:

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H. B. THOMPSON.