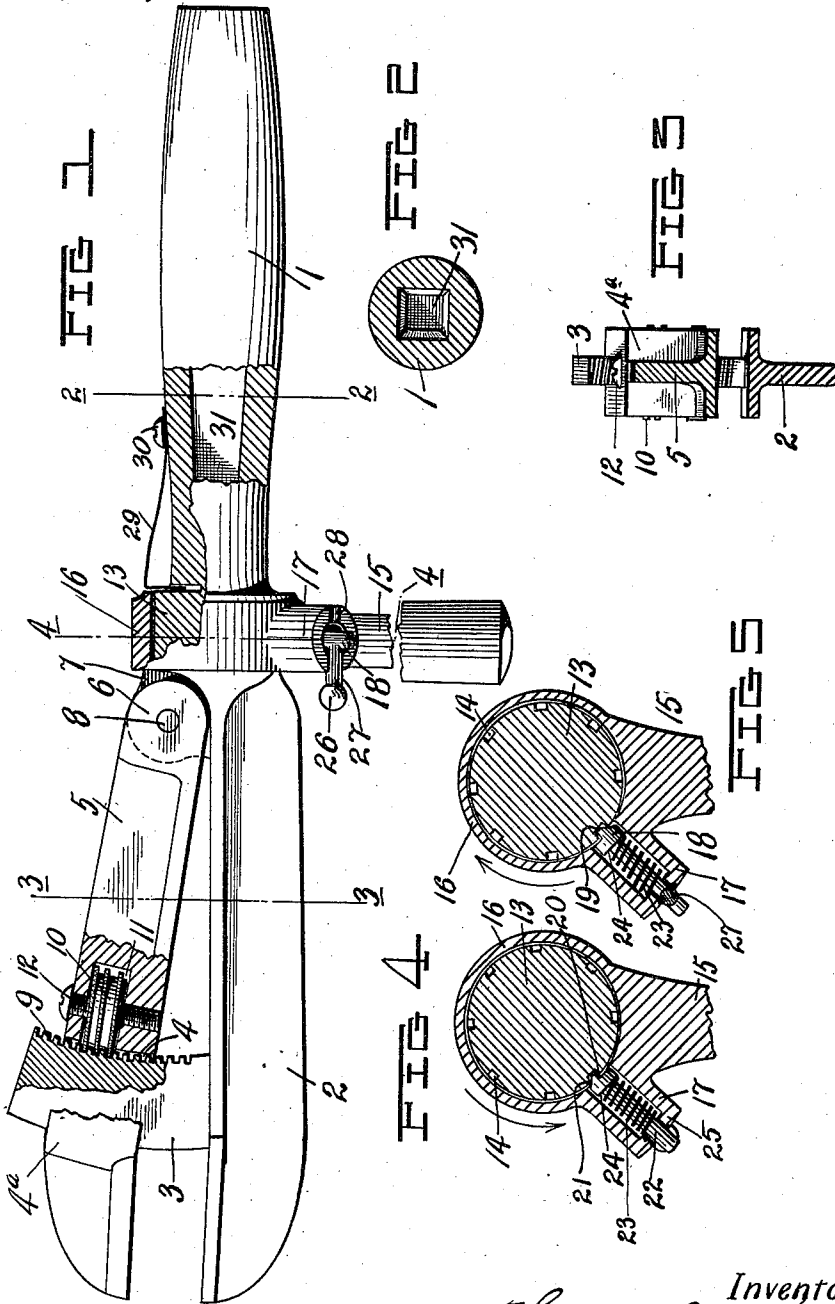


T. J. KENNEL.
WRENCH.

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1,002,157.

Patented Aug. 29, 1911.



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UNITED STATES PATENT OFFICE.

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WRENCH.

1,002,157.

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To all whom it may concern:

Be it known that I, THOMAS J. KENNEL, a citizen of the United States, residing at Middletown, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Wrenches; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference to certain new and useful improvements in wrenches, and its object is to improve the construction and operation of the jaws of the wrench and to provide an improved ratchet and pawl mechanism, thereby at the same time increasing the efficiency of the wrench and reducing the cost of production.

That the invention may be more fully understood reference is had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved wrench, parts being shown in section; Fig. 2 is a cross section as the same would appear if taken on the line 2—2 of Fig. 1, showing the shape of the interior of the handle; Fig. 3 is a cross section as the same would appear if taken on the line 3—3 of Fig. 1, showing the shape of the jaws; Fig. 4 is a section on the line 4—4 of Fig. 1, showing the ratchet and pawl construction for operating the wrench, the pawl being set to operate the wrench in a counter-clockwise direction, and Fig. 5 is a sectional view similar to Fig. 4, except that the pawl is set to operate the wrench in a clockwise direction.

Like numerals of reference indicate corresponding parts throughout the figures.

The wrench comprises the shank or handle portion 1 formed integrally with the jaw 2 of the gripping portion of the wrench. Extending laterally inward from the face of the jaw 2 is the arc-shaped rack-bar 3 which passes through the rectangular opening 4 in an enlarged portion 4^a of the opposing jaw 5. The inner end of said jaw 5 is bifurcated forming ears 6, one of which only appears in the figures owing to the wrench being shown in elevation only, and between the ears 6 is inserted the ear 7 formed integral with the jaw 2, and for the purpose of attaching the jaw 5 with a pivotal relation to the jaw 2 the pin 8 is passed through the ears 6 and 7. The inner

concave edge of the rack bar 3 is provided with the teeth 9 which are engaged by the worm wheel 10 which is held in place in the cavity 11 of the enlarged portion 4^a of the jaw 5 by the screw 12 upon which it can be manually rotated. By manually operating the worm wheel 10, the jaw 5 can be moved toward or away from the jaw 2 thereby closing or opening the jaws of the wrench as the case may be.

At the junction of the handle 1 with the jaw 2 is the enlarged cylindrical body portion 13, having in its periphery a plurality of notches or grooves 14.

15 denotes a lever having at its inner end the ring-like portion 16, said portion 16 being adapted to fit on the cylindrical body portion 13 and have a pivotal relation therewith. Projecting radially from one side of the ring 16 is the tubular extension 17 containing a dog or pawl 18. Said dog or pawl 18 has at its inner engaging end the projecting tooth or lug 19, which has one angular perpendicular edge 20 adapted to engage in the notches or grooves 14 when the lever 15 is operated in that direction while the opposite edge is beveled as at 21 to allow the dog or pawl 18 to ride past the notches 14 without engaging with the same when the lever is operated in the opposite direction. Surrounding the shaft portion 22 of the dog 18 is the spring 23 bearing against the shoulder 24 of the dog and the extension 25 of the tubular projection 17, said spring being for the purpose of holding the dog or pawl 18 in position to engage the notches 14. The finger hold 26 is provided for the purpose of retracting the dog in opposition to the spring 23 to a disengaging position and also for the purpose of reversing the position of the engaging portion 20 of the dog 18 thereby reversing the operative direction of the lever 15. The body portion 27 of the finger hold 26 is adapted to fit into the slots 28 for the purpose of holding the dog 18 in the position in which it is set. By means of this simple device the dog can be quickly and easily adjusted so that the lever will operate the wrench either for tightening or loosening the nut, bolt, or other objects upon which the wrench is being used.

The thumb spring 29 is provided attached to the handle 1 of the wrench for the purpose of holding the lever in its operating position on the wrench. By pressing the spring with

the thumb the ring-like portion 16 of the lever 15 can be drawn out over the handle and removed from the wrench, should it be desired to operate the wrench by other means than the lever.

The handle is preferably tubular, the interior being a squared socket 31 tapered so as to receive and hold an auger-bit, that the wrench may serve the purpose of a brace.

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

1. A wrench comprising a handle portion, a jaw formed integrally therewith, a second jaw pivotally connected with the first mentioned jaw, a rack bar connected with the first mentioned jaw, means in the second jaw in mesh with said rack, whereby the second jaw may be oscillated, and a lever having operative relation with said handle portion.

2. A wrench comprising a handle portion terminating in a fixed jaw, a second jaw

pivoted to the fixed jaw, an arc shaped rack bar connected with the fixed jaw, a worm gear carried by the pivoted jaw and in mesh with said rack bar and a lever having a reversible operative connection with said handle portion.

3. A wrench comprising a handle portion terminating in a fixed jaw, said handle where it merges into the jaw formed with a cylindrical portion, a second jaw pivoted to the fixed jaw, an arc shaped rack bar connected with the fixed jaw, a worm gear carried by the pivoted jaw and in mesh with said rack bar, and a lever having operative connection with said cylindrical portion of said handle.

In testimony whereof I affix my signature, in presence of two witnesses.

THOMAS J. KENNEL.

Witnesses:

CHAS. W. LA PORTE,
ROBERT FLOWE.