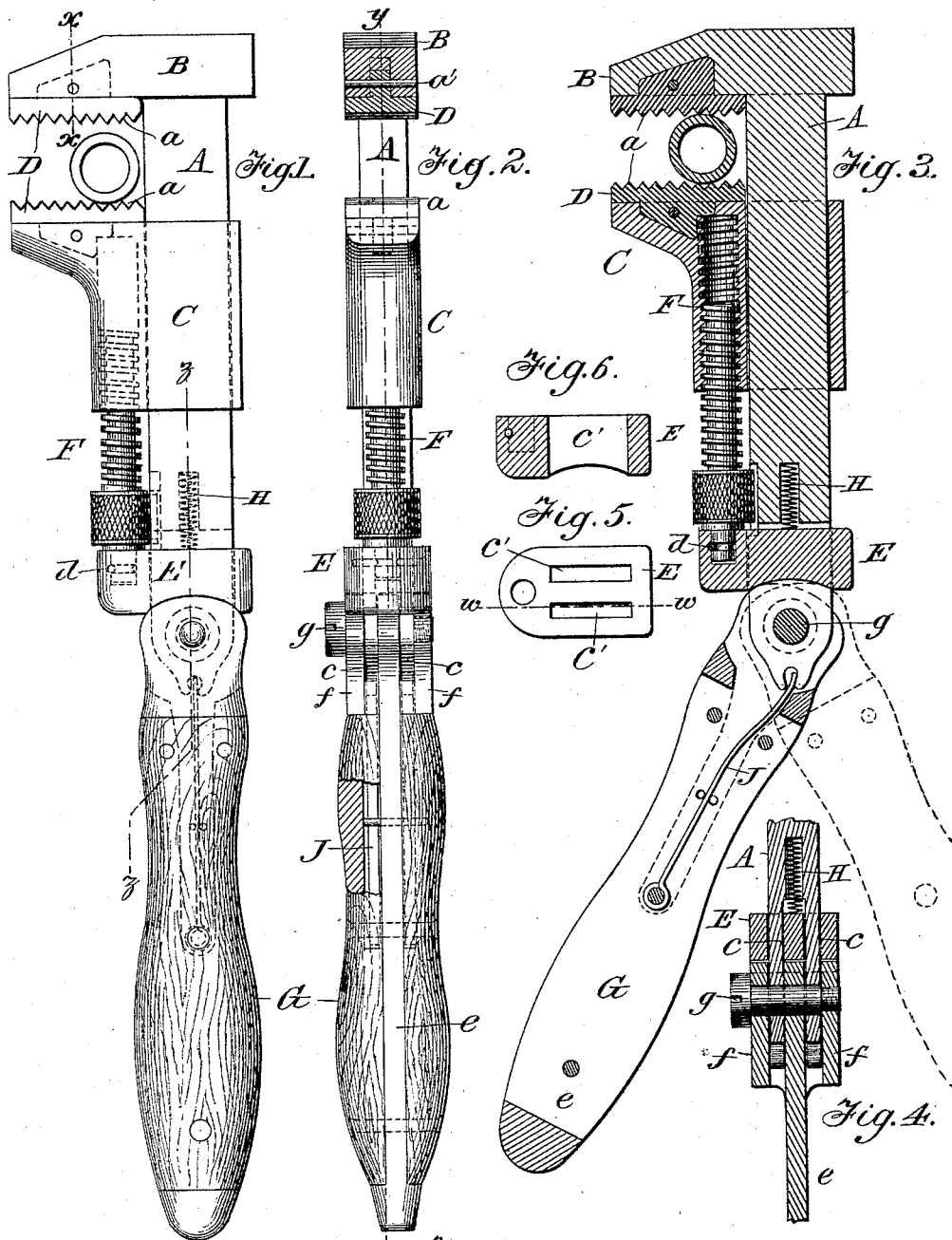


(No Model.)

M. E. O'CONNOR.
WRENCH.

No. 460,155.

Patented Sept. 29, 1891.



Witnesses

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UNITED STATES PATENT OFFICE.

MICHAEL E. O'CONNOR, OF BROOKLYN, NEW YORK.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 460,155, dated September 29, 1891.

Application filed August 1, 1888. Serial No. 281,669. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL E. O'CONNOR, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Wrench, of which the following is a specification.

My invention relates to an improvement in wrenches, and more particularly to an improved sliding-jaw pipe or nut wrench.

The object of my invention is to produce an improved wrench of the class mentioned which shall be extremely cheap in first cost, simple in construction and operation, composed of a minimum number of strong durable parts, and which shall have a laterally-movable handle to give the jaws a parallel motion toward each other.

With these ends in view my invention consists in certain novel features of construction and combinations of parts more fully described hereinafter, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a side elevation of the wrench. Fig. 2 is a front edge view, the upper jaw being shown in section on line *x x*, Fig. 1. Fig. 3 is a longitudinal section on line *y y* of Fig. 2, the handle being shown swung laterally to move the jaws toward each other. Fig. 4 is a longitudinal detail section on line *z z*, Fig. 1, of the joint between the wrench-bar and handle, showing adjacent parts. Fig. 5 is a detail plan view of the movable slotted piece in which one end of the screw-bar is journaled. Fig. 6 is a vertical section of the same on line *w w*, Fig. 5; and Fig. 7 is a detail perspective view, looking from above, of one of the teeth-plate, showing the straight pyramidal teeth extending transversely across the plate in an oblique direction.

In the drawings, the reference-letter A indicates a straight smooth-faced wrench-bar, upon which the movable jaw freely slides, and which is constructed of suitable material to compose a strong and durable backbone for the wrench, and upon its upper end said bar is provided with a rigid jaw B.

C indicates a sliding jaw provided with an opening through which the wrench-bar passes, the jaw proper projecting outwardly beneath and parallel with the rigid jaw. The rigid

and sliding jaws are both similarly recessed in their adjoining faces to receive the flat teeth-plate D, each provided with a series of straight pyramidal teeth *a*, extending transversely across the outer plane faces of said plates in an oblique or inclined direction, and with perforated lugs *b*, extending from the opposite or inner side, said lugs fitting snugly into the recesses in the jaws and secured therein by rivets or pins *a'*, passing through the jaws and lugs, as shown, with their edges preferably flush with the sides of the jaw.

It should be fully understood that the straight teeth are pyramidal, the line of whose perpendicular is at right angles to the plane of the plate, and that they extend transversely across the plate in an oblique direction, thus giving the wrench a shearing grip and preventing the same from wobbling when in operation.

The handle end of the wrench-bar is longitudinally slotted or bifurcated, Fig. 4, to form two parallel legs *c c*. A movable block or piece E, provided with a pair of slots *c' c'*, is movably confined upon said bifurcated end, the legs *c c* passing through the slots *c' c'*, and the block thus embracing the handle end of the wrench-bar in sliding longitudinal adjustment. The front end of the block extends outwardly and is provided in its upper face with a bearing or socket, in which one end of the screw-bar F is journaled, the opposite screw-threaded portion of said bar operating in a screw-thread socket in the sliding jaw, as usual, and the screw-bar is provided with a thumb or turn nut as commonly employed. The end of the screw-bar is removably held in its bearing in the block by means of a pin *d*, passing transversely through the block E and tangentially through an annular groove in the periphery of the screw-bar, thus allowing the same to revolve and yet keeping it in place.

G indicates a movable pivoted or hinged handle provided at its upper end with metallic plates *f e f*, having cam or eccentrically shaped upper outer edges bearing against the lower concaved edge of the sliding block E, as clearly shown. The center plate *e* extends the whole or part of the length of the handle and forms the main portion of the same, to which the side pieces of wood or other mate-

rial are secured. The said cam or eccentrically shaped plates *f*, *f*, and *e* are preferably secured to each other or cast integral a suitable distance apart, so that the legs *c c* of the
 5 bifurcated end of the wrench-bar can pass loosely between them, and the handle is pivoted to the wrench-bar to allow lateral motion of the same either way and in one plane by a bolt, pin, or screw *g*, passing transversely
 10 through the cam-plates and legs *c c*, as shown. The concaved portion of the sliding screw-bar journal-block *E* is held with a constant pressure against the heads of said cam-plates by a coiled or other spring *H*, located in the
 15 wrench-bar and bearing against the upper face of said block *E*.

It should be observed that the three bridges or portions of the screw-bar journal-block on each side of the slots *c' c'* are engaged
 20 by the heads of the three cam-plates, respectively, and that the cam-edges of said plates are so cut that when the handle is in its normal position, Fig. 1, the screw-bar journal-block is at the limit of its downward
 25 movement, and when the handle is thrown laterally the cam-face will bear against said block and move the same longitudinally with the sliding jaw against the tension of spring *H*, thus decreasing the space between the two
 30 jaws and firmly embedding the teeth *a* in the article to be manipulated. The handle is returned to its normal position in line with the wrench-bar by one or more plates or other
 35 spring *K*, located in the handle and engaging the lower ends of the wrench-bar, which in the present instance are slotted to receive the ends of said springs *K*. In operation the sliding
 40 jaw is moved by the screw-bar into engagement with the pipe, &c., and then lateral strain is exerted upon the handle, which operation forces the lower movable jaw into
 45 tight engagement with the article to be operated upon, and the greater the lateral strain upon the handle when turning the nut or pipe the tighter the jaws clamp the same.

The great utility and advantages attained by the use of the plates attached to the wrench-jaws and provided with straight teeth extending obliquely across the plates and projecting
 50 in directions parallel with the movement of the jaws are obvious, for the greater the strain exerted upon the handle the tighter the jaws are drawn together and the straight teeth embedded in the pipe or other article. The
 55 straight teeth are a great improvement over the inclined teeth heretofore used in this and other classes of wrenches.

I do not wish to limit myself to any peculiar form of springs for holding the screw-bar
 60 journal-block in engagement with the cam-

faces of the handle, or for returning the handle to its normal position after being swung laterally.

It is evident that various changes and modifications can be made in the form and arrangement of the parts described without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the precise construction herein set forth, but consider myself fully entitled to all such
 70 changes.

What I claim is—

1. In a wrench, the combination of a wrench-bar having its lower end longitudinally bifurcated, a rigid jaw, a sliding jaw, a block embracing and longitudinally movable on
 75 said end of the bar and having a cross-piece located in the slot of said bifurcated end, a screw-bar connecting the movable jaw and said block, a handle comprising three connected plates having their upper ends a distance apart and their upper edges having
 80 cam-faces, the center plate being extended to form part of the handle, the legs of the wrench-bar end extending into the handle between the said plates, a pivot-pin passing
 85 through the plates and bar-legs, a spring in said bar holding said block against the cams, and a spring in and holding the handle in its normal position.

2. In combination, the wrench-bar having
 90 notched lower end, the rigid jaw, the movable jaw, a movable block on the end of said bar, the screw-bar connecting said blocks and the movable jaw, the swinging handle pivoted to said bar and having cam-plates engaging
 95 said block, and a plate-spring longitudinally located in said handle, having its upper free end confined in said notch, as set forth, to hold the handle in its normal position.

3. In a monkey-wrench, the combination of the wrench-bar, the rigid jaw, the sliding jaw, the means to adjust said sliding jaw, the
 105 swinging handle having a cam to draw the two jaws toward each other when the handle is swung laterally, the engaging faces of said jaws being straight and parallel and provided with straight pyramidal teeth projecting toward the teeth of the opposite jaw in
 110 planes parallel with the movement of the jaws and extending transversely and obliquely across said faces, as set forth.

Signed at New York, in the county of New York and State of New York this 13th day of
 115 July, A. D. 1888.

MICHAEL E. O'CONNOR.

Witnesses:

L. L. COUDERT,
 JAMES FOX.