

No. 886,448.

PATENTED MAY 5, 1908.

J. E. WAKEFIELD.  
WRENCH.

APPLICATION FILED APR. 9, 1903.

Fig. 1.

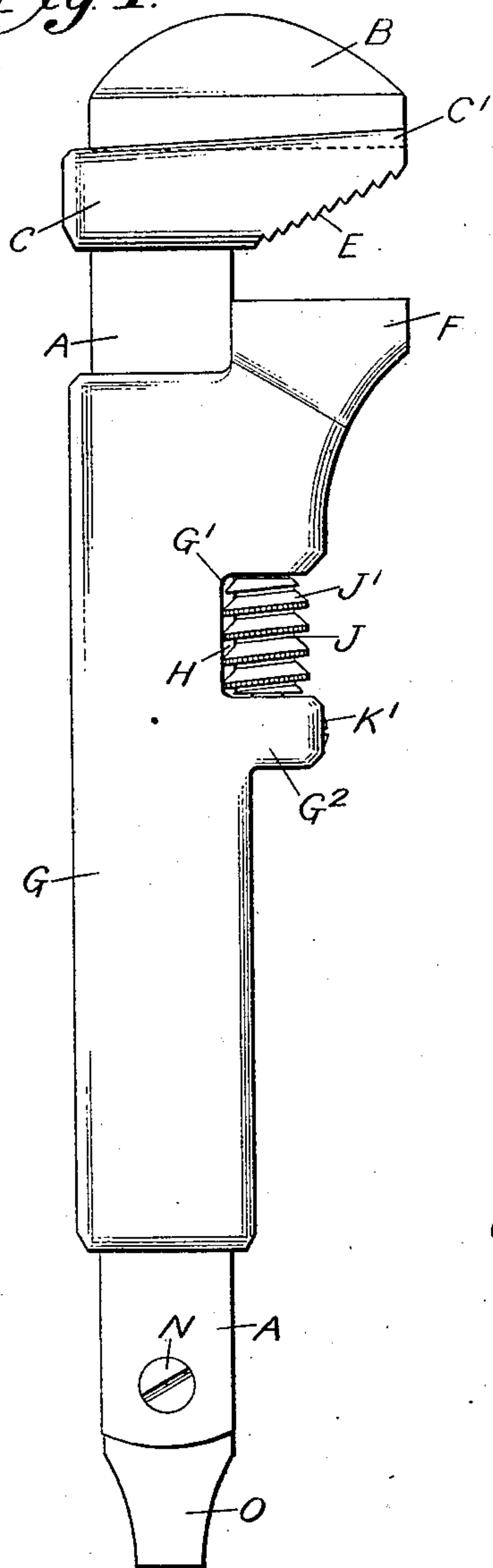


Fig. 3.

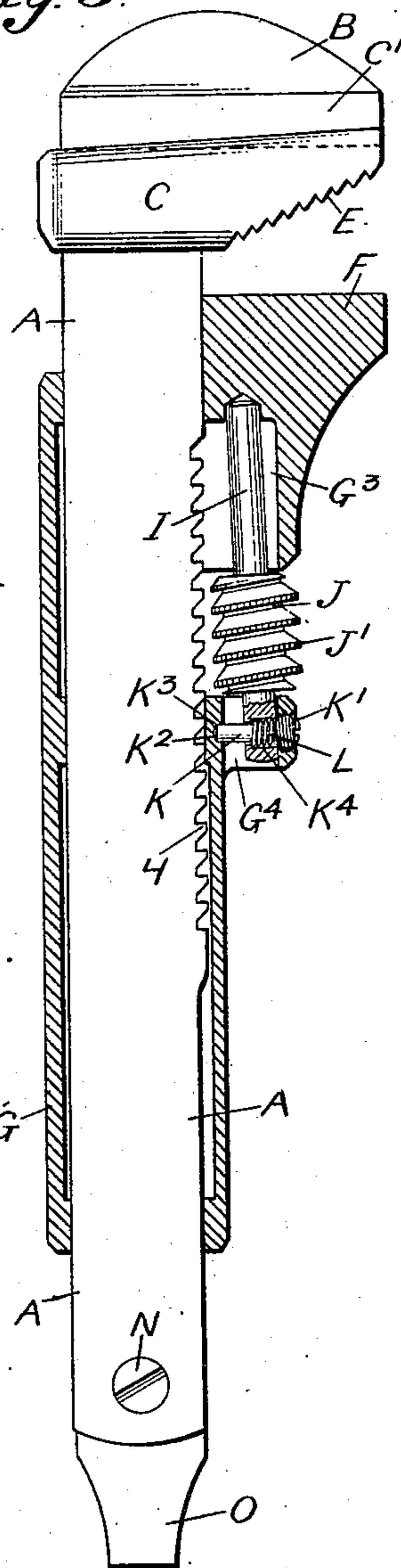


Fig. 2.

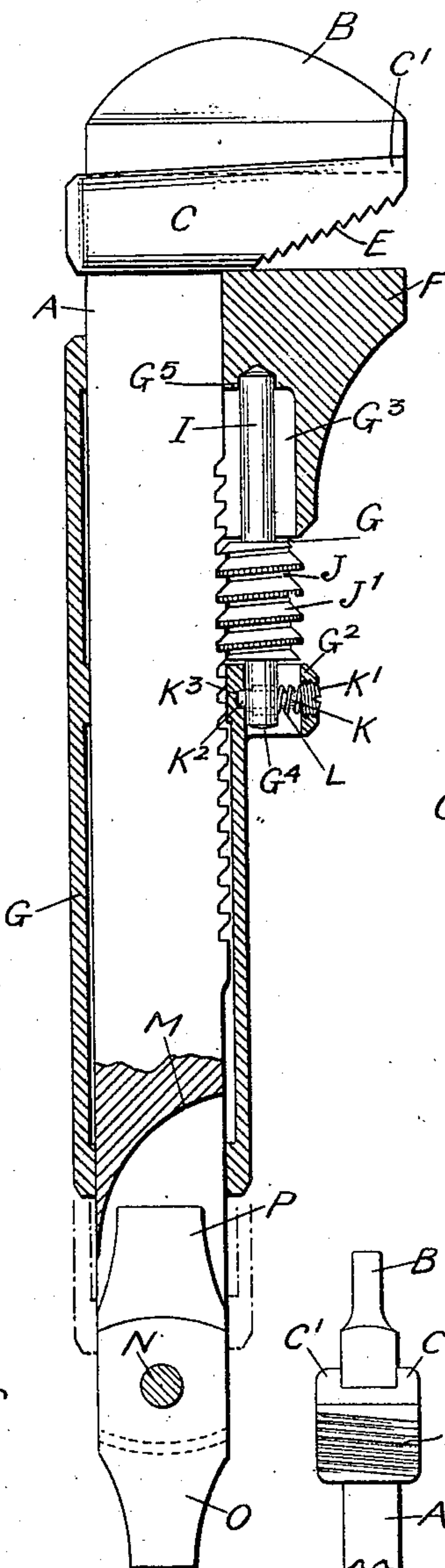


Fig. 4.

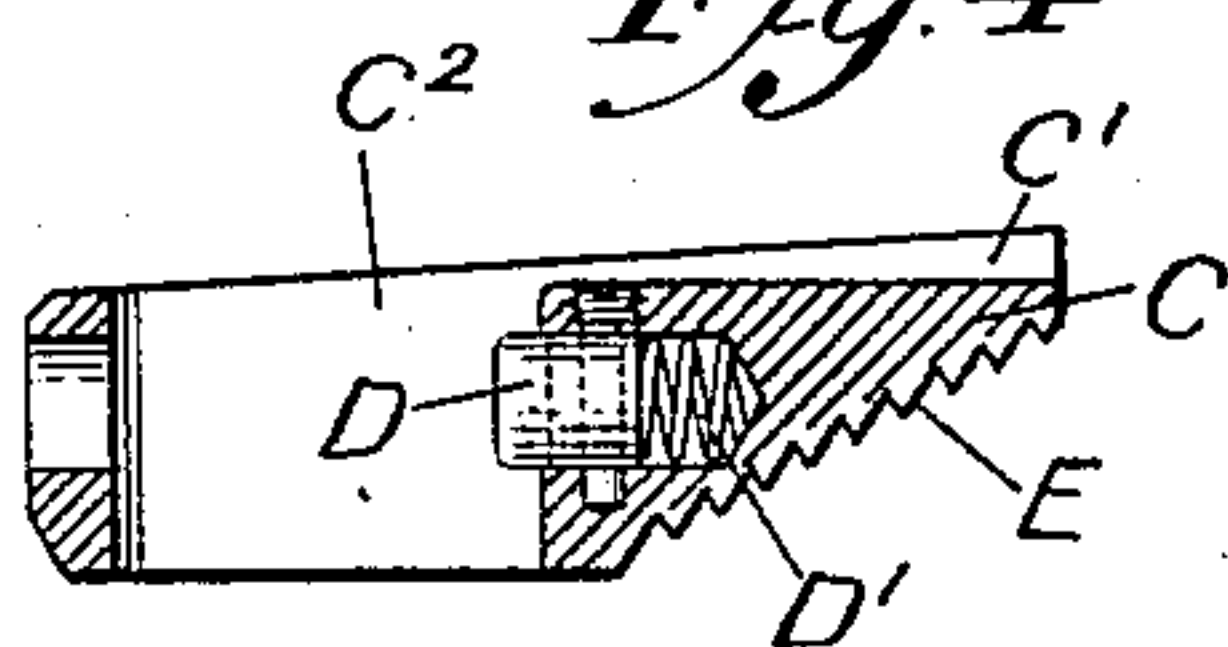
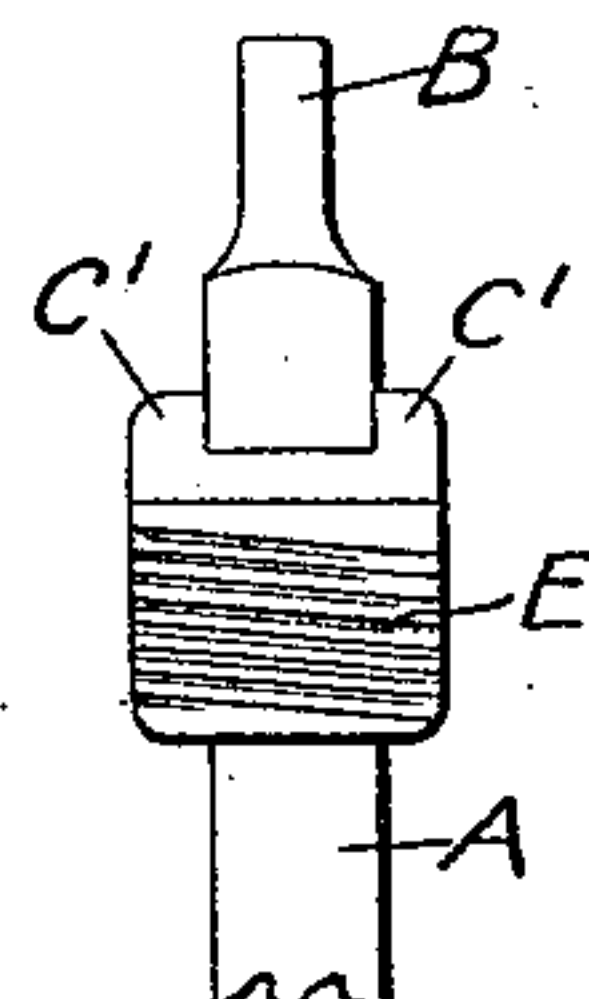


Fig. 5.



Witnesses  
L. H. Storer  
Penelope Comberbach.

Inventor  
John E. Wakefield  
By Rufus D. Souley  
Attorney.



# UNITED STATES PATENT OFFICE.

JOHN E. WAKEFIELD, OF WORCESTER, MASSACHUSETTS.

## WRENCH.

No. 886,448.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed April 9, 1903. Serial No. 151,704.

*To all whom it may concern:*

Be it known that I, JOHN E. WAKEFIELD, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented new and useful Improvements in a Wrench, of which the following is a specification.

The objects of my invention are to provide a simple, easy and rapid method of adjustment of the movable jaw of a wrench; to provide a method of securing the removable portion of the fixed jaw from lateral movement, thereby lessening the strain on the bar or handle portion of the wrench; and to simplify the process of manufacture, decrease its cost and allow of an easy assembling and separation of the various parts of the wrench.

Referring to the accompanying drawings, Figure 1 is a side elevation of my improved wrench. Fig. 2 is a side elevation of the same with the movable jaw in section, showing the spindle with its rotatable worm in engagement with the rack or teeth on the wrench bar. Fig. 3 is a similar view with the worm released from engagement with the rack on the wrench bar, allowing a free longitudinal movement of the movable jaw in either direction. Fig. 4 is a longitudinal sectional view of the removable portion of the fixed jaw forming a pipe wrench attachment. Fig. 5 is a front elevation of the same showing an improved method of corrugating said removable attachment.

Similar letters and figures of reference refer to similar parts in the different views.

In constructing a wrench in accord with my improvements, I make a bar or handle portion A provided at one end with a head forming a fixed jaw B. Upon the bar A I slip a removable jaw C, wider than the fixed jaw B. The upper portion of the removable jaw C has ribs C<sup>1</sup>, fitted to receive the fixed jaw B as shown in Fig. 5, and prevent lateral movement of the removable jaw C, thereby lessening the strain on the bar A. The removable jaw C is provided with an opening C<sup>2</sup> fitted to inclose the bar A and owing to the difficulty of economically forming this opening by the process of drop forging, I make the upper edge of said removable jaw C on a bevel, forming triangular ribs C<sup>1</sup> which are widest toward the front of the jaw C, as shown in Fig. 4. This furnishes a secure grip on the fixed jaw B by the removable jaw C at its front end and reduces the

length of the opening C<sup>2</sup> through which the bar A of the wrench passes. The opening C<sup>2</sup> is large enough to allow the free movement of the bar A and any lost motion is taken up by a pin D which is pressed against the front edge of the bar A by a spring D<sup>1</sup>. The front and rear walls of the opening C<sup>2</sup> are smooth and fit the smooth edges of the bar A, and the spring actuated pin D is held in place by a screw D<sup>2</sup> which passes through a slot in the pin D, thereby allowing a longitudinal movement of the pin D and retaining the pin D in position when the head C is removed from the bar A.

The grooves or corrugations E in the front surface of the removable jaw C are placed across the surface at an oblique angle to the side of the jaw, as shown in Fig. 5, thereby affording a firm grip on a pipe or other object held.

I place a movable or sliding jaw F on the bar A, said jaw having a sleeve G integral therewith, which allows the jaw to slide easily along the bar A. The sleeve G is cut away at G<sup>1</sup> to expose the ratchet shaped teeth H on the bar A and forming a lug G<sup>2</sup>. The sleeve G is also chambered at G<sup>3</sup> and is provided with an opening G<sup>4</sup> through the lug G<sup>2</sup> to receive a spindle I, one end of which is held in a shallow recess G<sup>5</sup>, counterbored in the end wall of the chamber G<sup>3</sup>, permitting a slight angular movement of the spindle I from the position shown in Fig. 2, to that shown in Fig. 3. Rotating loosely on the spindle I, is a worm J, provided with a ratchet shaped spiral thread J<sup>1</sup> preferably having a milled edge, and adapted to engage the teeth H in the bar A. Passing through the end of the spindle I, is a retaining pin K, having a screw threaded head K<sup>1</sup> held in the lug G<sup>2</sup>, with the tip K<sup>2</sup> of the pin held in a shallow counterbored recess K<sup>3</sup> in the wall of the opening G<sup>4</sup>, with sufficient pressure to prevent the pin from working loose. The hole through the spindle I is also counterbored to provide an annular chamber K<sup>4</sup>, adapted to receive one end of a spiral spring L, which bears at its other end against the screw head K<sup>1</sup> to exert a pressure against the end of spindle I to normally hold the worm J in engagement with the ratchet teeth H on the bar A. As the sleeve G is moved toward the fixed jaw B, the spring L yields to allow the thread J<sup>1</sup> of the worm J to slide over the teeth H of the bar A, while the sleeve will be held from movement in the opposite direc-



tion, thereby allowing the movable or sliding jaw F to be moved against the article to be held by a single quick movement, and an accurate adjustment of the sliding jaw can be effected by the rotation of the worm J on the spindle I. A quick release of the sliding jaw F is accomplished by seizing the worm J and lifting it out of engagement with the ratchet teeth H, as shown in Fig. 3. The end of the bar A is slotted as at M, and pivotally secured to the handle bar A by a stud N, are screw driver blades O and P, capable of being rotated on the stud N to bring either of the blades into an extended position beyond the end of the bar, or to be turned into the slotted end of the bar. By sliding the sleeve G on the bar A, it may be made to inclose the ends of the blades and prevent their rotation.

I am aware that it is not new to provide the movable jaw of a wrench with a rotating worm, or circular nut, engaging teeth in the handle bar, said worm being capable of being lifted out of engagement with said teeth, also that such a worm has been held on a spindle, capable of a lateral movement equal at both ends of the spindle, in order to allow the worm to be released from the teeth, and I do not claim either of these features broadly.

What I claim as my invention and desire to secure by Letters Patent is:

1. In a wrench, the combination with a handle bar, of a slidable removable jaw frictionally held on said handle bar, a slotted pin held in a recess in said jaw, a screw held in said jaw and passing through the slot in said pin and a spring held in said recess and pressing against said pin.

2. In a wrench, the combination with a handle bar provided with teeth and a fixed head, of a sliding jaw, a spindle carried by said jaw having its inner end loosely inserted in a shallow recess in said jaw, and its outer end free to move in an angular movement of the spindle, a worm rotating on said spindle in engagement with said teeth, a removable pin through the outer end of said spindle, and a spring surrounding said pin and acting against the free end of the spindle.

3. In a wrench, the combination with a handle bar provided with teeth, a fixed head, a sliding jaw, a spindle carried by said jaw having one end toward the fixed head loosely held in a shallow recess in said jaw, said recess fitting the end of the spindle and forming a pivotal connection between the spindle and jaw, with the opposite end of the spindle free to move in an angular movement of the spindle, a worm rotating on said spindle in engagement with said teeth, a spiral spring acting against the free end of said spindle, an opening in the free end of the spindle and a pin held in the sliding jaw and passing through said opening.

4. The combination of a handle bar having teeth, of a sliding jaw, a spindle held in said jaw and capable of angular movement, and having a hole in one end, a pin having an enlarged screw threaded head held in said jaw and a spring between said spindle and the screw threaded head of said pin, substantially as described.

Dated this 31st day of March 1903.

JOHN E. WAKEFIELD.

Witnesses:

RUFUS B. FOWLER,  
PENELOPE COMBERBACH.