

No. 760,103.

PATENTED MAY 17, 1904.

G. L. P. COMBS.  
TAP AND REAMER EXTENSION WRENCH.

APPLICATION FILED AUG. 28, 1903.

NO MODEL.

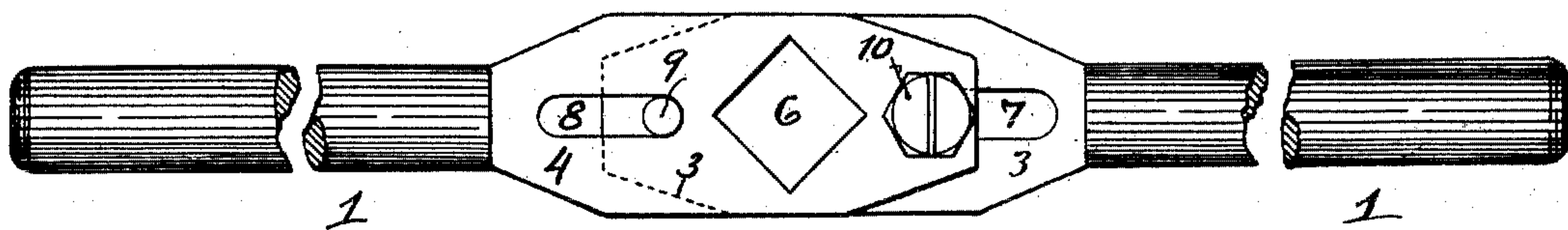


Fig. 1.

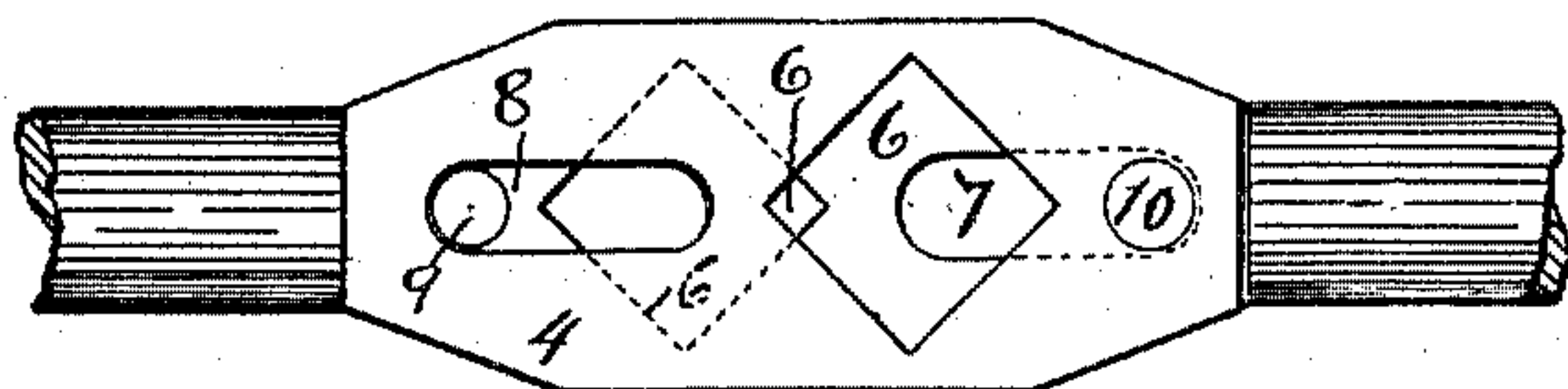


Fig. 2.

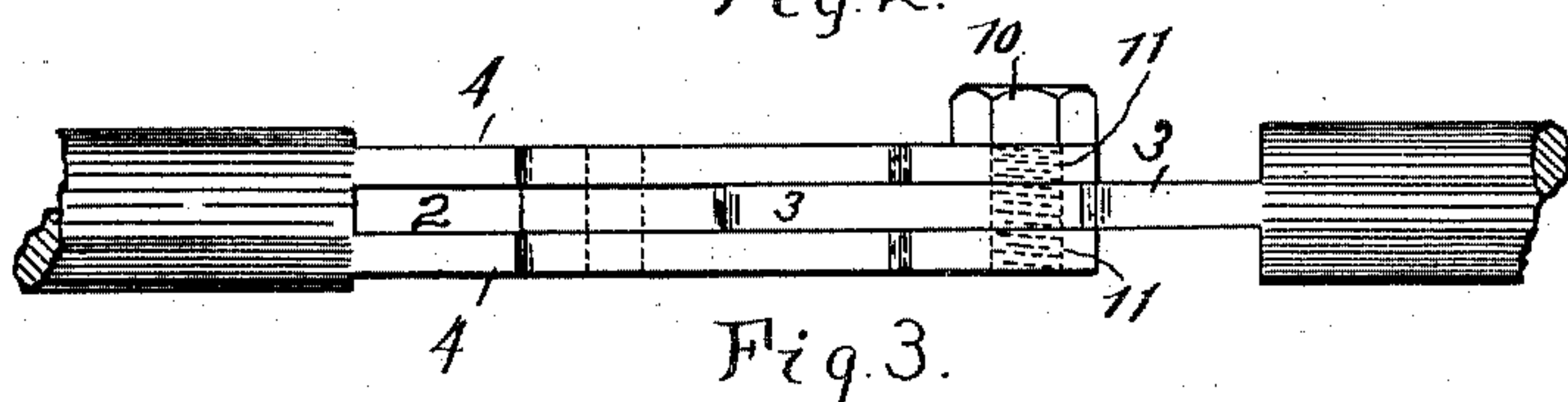


Fig. 3.

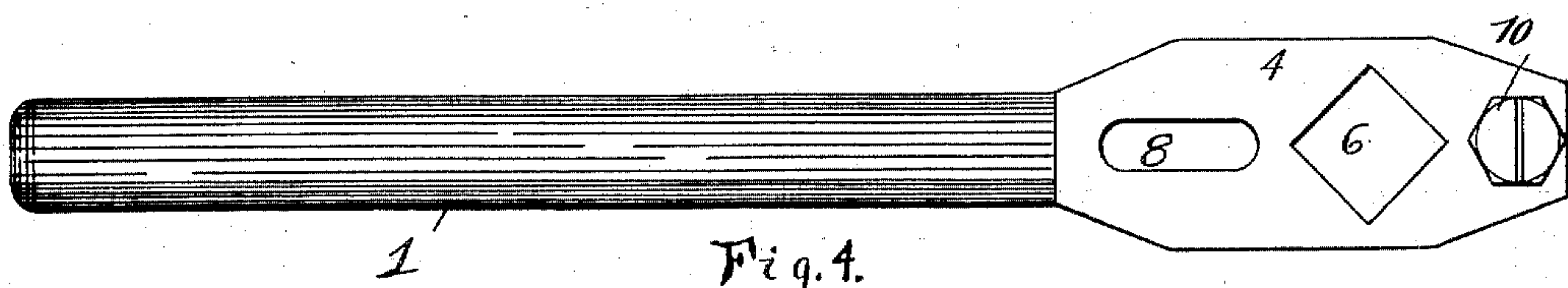


Fig. 4.

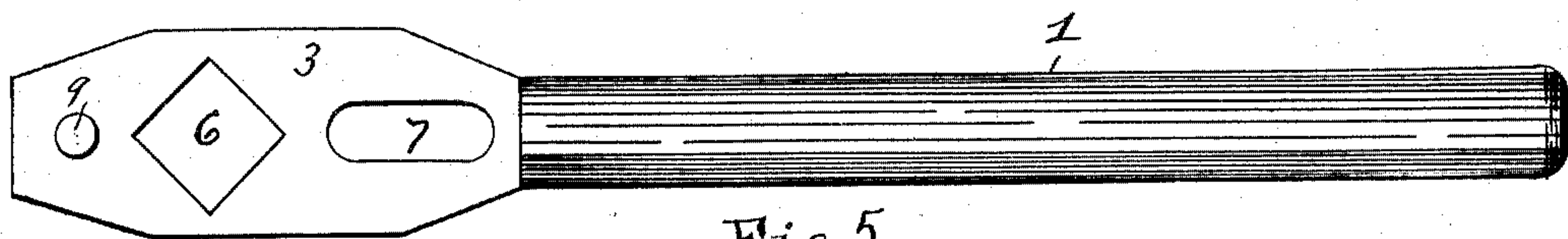


Fig. 5.

Witnesses

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# UNITED STATES PATENT OFFICE.

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## TAP AND REAMER EXTENSION-WRENCH.

SPECIFICATION forming part of Letters Patent No. 760,103, dated May 17, 1904.

Application filed August 28, 1903. Serial No. 171,055. (No model.)

*To all whom it may concern:*

Be it known that I, GARY L. P. COMBS, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Tap and Reamer Extension-Wrenches; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention comprises an extension-wrench for reaming and tapping purposes; and it consists of an adjustable wrench of the above type the members of which are adjustable longitudinally to vary the area of the opening which receives the head of the tool.

While the wrench is especially adapted for reaming and tapping, it is equally useful for turning any tool which has a square opening or end.

Preceding a detail description of the invention reference is made to the accompanying drawings, of which—

Figure 1 shows the wrench adjusted to provide a square opening of maximum area. Fig. 2 is a similar view showing the wrench adjusted to a position which provides a square opening of minimum area. Fig. 3 is a view looking at right angles to Figs. 1 and 2. Figs. 4 and 5 are detached views of the two members of the wrench.

In a detail description of the invention similar reference characters indicate corresponding parts.

1 1 designate the handles of the wrench, one of which terminates in a single plate 3, which extends from the center thereof, and the other of which has two plates 4 4, extending therefrom and providing an intervening space 2, which receives the single plate 3. In each of these plates 3 and 4 there is provided a square opening 6 for the head or square end of the tool and which occupies a position which is always central relatively to the ends of the handles 1 regardless of whether the handles are moved to their outer positions, as shown

in Fig. 1, or to their inner positions, as shown in Fig. 2. The single plate 3, which is movable, as before stated, between the plates 4 4, is provided with an oblong slot 7, and the plates 4 4 are also provided with oblong slots 8, said oblong slots 8 being in alinement and adapted to receive a pin 9, which is rigidly secured in the plate 3 adjacent to the end thereof. The slots 8 and the pin 9 provide a guide for the longitudinal movements of the plates 3 and 4, which movements are limited only by the said slots 8.

10 designates a screw which penetrates openings 11 in the plates 4 and also passes through the oblong slot 7 of the plate 3. This screw also provides a guide in the slot 7 for the longitudinal movements of the handles in increasing or decreasing the area of the opening 6. The screw 10 also performs the function of clamping the outer plates 4 firmly against the inclosed plate 3 when the wrench is adjusted to any desirable position from the position which gives the greatest area to the opening 6 to that which gives the smallest area to said opening. The screw 10 may be tightened by a wrench or a screw-driver, or any suitable means may be provided for tightening the said plates when adjusted to their proper positions.

It will of course be understood that the implement may be constructed to receive the head of a tapping or drilling tool of the greatest size, in which event it only becomes necessary to enlarge the remaining portions of the implement to correspond with the maximum area of the opening 6.

Having described my invention, I claim—

1. In a wrench, the combination of two handles terminating in plates which are slidingly connected, said plates having square openings therein and adapted to receive the square end of a tool, and the said openings registering with each other when the tool is in operative adjustment.

2. An adjustable wrench comprising two handles terminating at their adjacent ends in flat extensions, said extensions having square openings registering with each other when the tool is in operative adjustment, and the said openings being adapted to receive the square



end of a tool to be operated thereby, means for guiding said handles in the longitudinal movements thereof to decrease and increase the area of the opening, and means for tightening said extensions when adjusted to the requisite size of opening, substantially as set forth.

3. In an adjustable wrench, two handles movable longitudinally in opposite directions, said handles having flat extensions at their adjacent ends, square openings in said extensions adapted to receive the end of a tool to be operated, said openings registering with each other when the tool is in an operative position, longitudinal slots in said flat extensions, a pin projecting through one of said extensions and penetrating the adjacent slots in the remaining extensions, and means for tightening said extensions when the wrench is adjusted to the required position, substantially as set forth.

4. In a wrench, the combination of two handles, one of which terminates in two parallel plates with an intervening space, and the other of which has a single plate which is slidingly maintained within said space, square openings in said plates which register with each other and the area of which is decreased or increased from the maximum and minimum areas according to the extent of longitudinal movements imparted to the handles, and means for guiding such movements, substantially as set forth.

5. In a wrench, the combination of two han-

dles, one of which terminates in two parallel plates with an intervening space, and the other of which has a single plate which is slidingly maintained within said space, square openings in said plates which register with each other and the area of which is decreased or increased from the maximum and minimum areas according to the extent of longitudinal movements imparted to the handles, means for guiding such movements, and means for tightening the plates after the requisite adjustment is obtained, substantially as set forth.

6. In a wrench, two operating-handles, one of which terminates in two parallel inclosing plates with an intervening space, and longitudinal slots, and rectangular square openings in said plates, and the other of which terminates in a single plate adapted to be projected into the space between the inclosing plates, the said single plate having a pin projecting laterally therefrom and adapted to penetrate the longitudinal openings in the inclosing plates, the said single plate having a square opening which registers with the square opening in the inclosing plates, and a binding-screw penetrating the inclosing plates, and an oblong opening in the single plate, substantially as set forth.

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

GARY L. P. COMBS.

Witnesses:

R. J. McCARTY,

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