C. W. McDANIEL.

DUPLEX WRENCH.

APPLICATION FILED JAN. 10, 1917.

1,246,447. Patented Nov. 13, 1917.

FIG. 1.

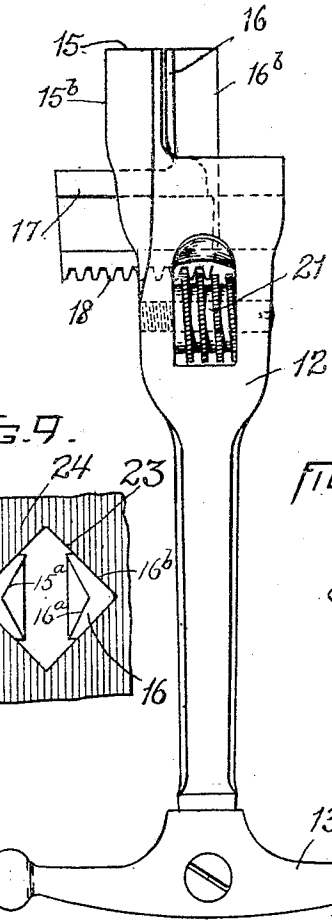


FIG. 3.

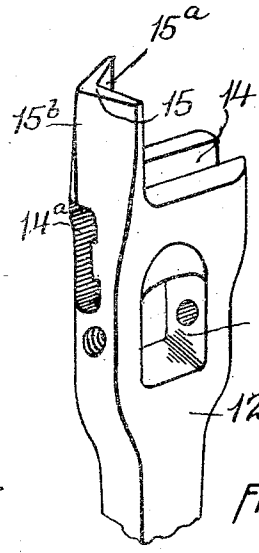


FIG. 4.

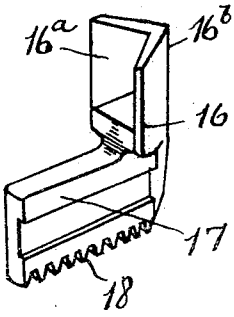


FIG. 9.

FIG. 5.

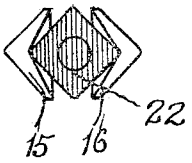


FIG. 6.

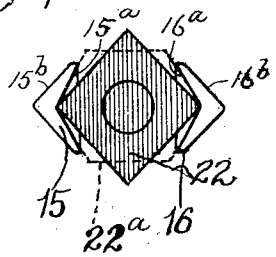


FIG. 7.

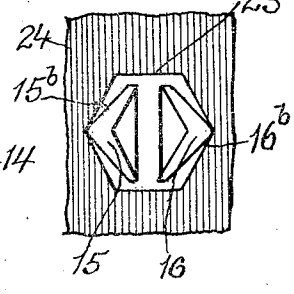


FIG. 2.

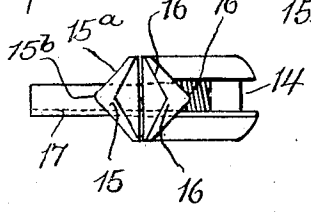
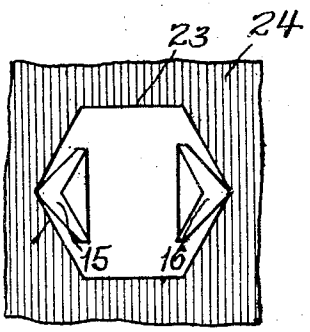


FIG. 8.



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UNITED STATES PATENT OFFICE.

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DUPLEX WRENCH.

1,246,447. Specification of Letters Patent. Patented Nov. 13, 1917.

Application filed January 10, 1917. Serial No. 141,569.

To all whom it may concern:

Be it known that I, CHARLES W. McDANIEL, a citizen of the United States, residing at Portsmouth, in the county of Rockingham and State of New Hampshire, have invented new and useful Improvements in Duplex Wrenches, of which the following is a specification.

This invention relates to a wrench of the socket type, comprising a stock or body and two relatively adjustable jaws projecting therefrom, said jaws having reëntrant-angled inner faces formed to engage and turn a polygonal body such as a nut.

The invention has for its object to provide a duplex wrench adapted not only to externally engage a nut, or other polygonal body, but also to internally engage a polygonal socket such as that formed in certain forms of screw-threaded bodies.

The invention is embodied in the improvements hereinafter described and claimed, whereby a duplex wrench is provided, the jaws of which are quickly adjustable and adapted to be positively confined at various distances apart for either internal or external use.

Of the accompanying drawings forming a part of this specification,—

Figure 1 is a side elevation of a duplex wrench embodying my invention.

Fig. 2 is an end elevation of the same.

Fig. 3 is a perspective view of a portion of the stock and the fixed jaw thereof.

Fig. 4 is a perspective view of the movable jaw separated from the stock.

Figs. 5 and 6 are end views of the jaws, illustrating their external application.

Figs. 7, 8, and 9 are end views of the jaws, illustrating their internal application.

The same reference characters indicate the same or similar parts in all of the figures.

In the drawings,—12 represents an elongated stock or body having at one end a transverse handle 13 by which it may be rotated, and at the opposite end a transverse guide way 14, one end of which is formed by a slot 14^a extending through one edge of the stock.

Projecting outwardly from the guide way 14 is a fixed extension 15 which is integral with the stock and constitutes a fixed jaw.

The jaw 15 has a salient-angled outwardly facing cheek 15^a, and a reëntrant-angled inwardly facing cheek 15^b, the apexes of said cheeks being substantially parallel with the longitudinal axis of the stock.

16 represents a movable jaw having a reëntrant-angled inwardly facing cheek 16^a and a salient-angled outwardly facing cheek 16^b, said faces extending parallel with the faces of the jaw 15. The jaw 16 is provided with a shank 17 having rack teeth 18 and adapted to slide in the guide way 14, 14^a.

The stock is provided with an opening 20 in which is journaled a manually rotatable barrel or cylindrical member having a worm 21. The axis of the barrel is parallel with the path of movement of the jaw 16 and shank 17, said worm engaging the rack-teeth 18, as shown by Fig. 1. The described relative arrangement of the rack, the worm and the movable jaw is such that the worm, when at rest, positively confines the movable jaw in any position to which it may be adjusted by the rotation of the worm.

The wrench is adapted to be used like an ordinary socket wrench, the pair of inwardly facing cheeks externally engaging a polygonal body such as a nut 22, as indicated by Figs. 5 and 6, said nut being either square or hexagonal. The pair of outwardly facing cheeks may internally engage the wall of a polygonal socket 23 (either square or hexagonal) in a body 24 intended to be turned by the wrench, as indicated by Figs. 7, 8, and 9, said body being, for example, an externally threaded circular plug or plate adapted to engage a tapped socket. The described jaw-adjusting means, common to both pairs of cheeks, and including a single manually rotatable member (the worm-carrying barrel) enables the cheeks of each pair to be quickly spaced the required distance apart, and holds the outwardly facing, as well as the inwardly facing cheeks, immovable relatively to each other after adjustment.

I am aware that a socket wrench adapted to be used in the manner indicated by Figs. 5 and 6 is not new. I am the first, however, so far as I am aware, to provide a quickly adjustable duplex wrench having relatively adjustable jaws presenting a pair of outwardly facing salient-angled cheeks adapted to enter and internally engage a polygonal socket, and a pair of inwardly facing reëntrant-angled cheeks adapted to externally engage a polygonal body, and jaw-adjusting means common to both pairs

of cheeks, adapted to quickly adjust and positively confine the same for the performance of their separate functions, said means including a single manually rotatable operating member, such as the cylinder having the worm 21, the rotation of which quickly varies the spacing of the cheeks, said member, when at rest, positively confining the cheeks for both external and internal use. When only one jaw is movable, as here shown, only one rack is included in the adjusting means, and the cylinder has a single worm, as shown by Fig. 1. The invention as hereinafter claimed, may, however, be embodied in a wrench of the type shown in Letters Patent No. 920,372, granted May 4, 1909, both jaws being movable and the cylinder being provided with two worms of opposite inclination, engaging racks formed on the two jaws. In other words, the single-acting wrench disclosed by said patent may be converted into a quickly adjustable duplex or double-acting wrench embodying the present invention, by providing the jaws with the outwardly facing salient-angled cheeks 15^b and 16^b.

The jaw sides or faces forming the cheeks 15^b, 16^b are substantially at right angles to each other, so that said cheeks are adapted to enter and engage angular corners of either a hexagonal socket, as shown by Figs. 7 and 8, or a rectangular socket, as shown by Fig. 9. The jaw sides or faces forming the cheeks 15^a, 16^a form an obtuse reentrant angle adapted to receive and engage angular corners of either a square nut 22, or a hexagonal nut 22^a (shown by dotted lines in Fig. 6).

The jaw sides forming the salient angled cheeks 15^b, 16^b diverge from the jaw sides forming the reëntrant angled cheeks 15^a, 16^a, from the outer edges of the jaws to the apexes thereof, so that each jaw is centrally thickened or reinforced, and is therefore adapted to resist twisting strains tending to break or crack it at its apex.

I claim:

A duplex wrench comprising a stock, two relatively adjustable jaws thereon, and jaw-adjusting means having provisions for positively securing the jaws variably spaced apart, each jaw having an inwardly facing reëntrant angled cheek, the sides of which form an obtuse angle adapted to coöperate with the inwardly facing cheek of the other jaw in engaging either a square or a hexagonal nut, and an outwardly facing salient angled cheek, the sides of which form a right angle adapted to coöperate with the outwardly facing cheek of the other jaw in engaging either a square or a hexagonal socket, the sides of the salient angled cheeks diverging from the sides of the reëntrant angled cheeks from the outer edges of the jaws to the apexes thereof, whereby the jaws are centrally thickened or reinforced.

In testimony whereof I have affixed my signature.

CHARLES W. McDANIEL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."