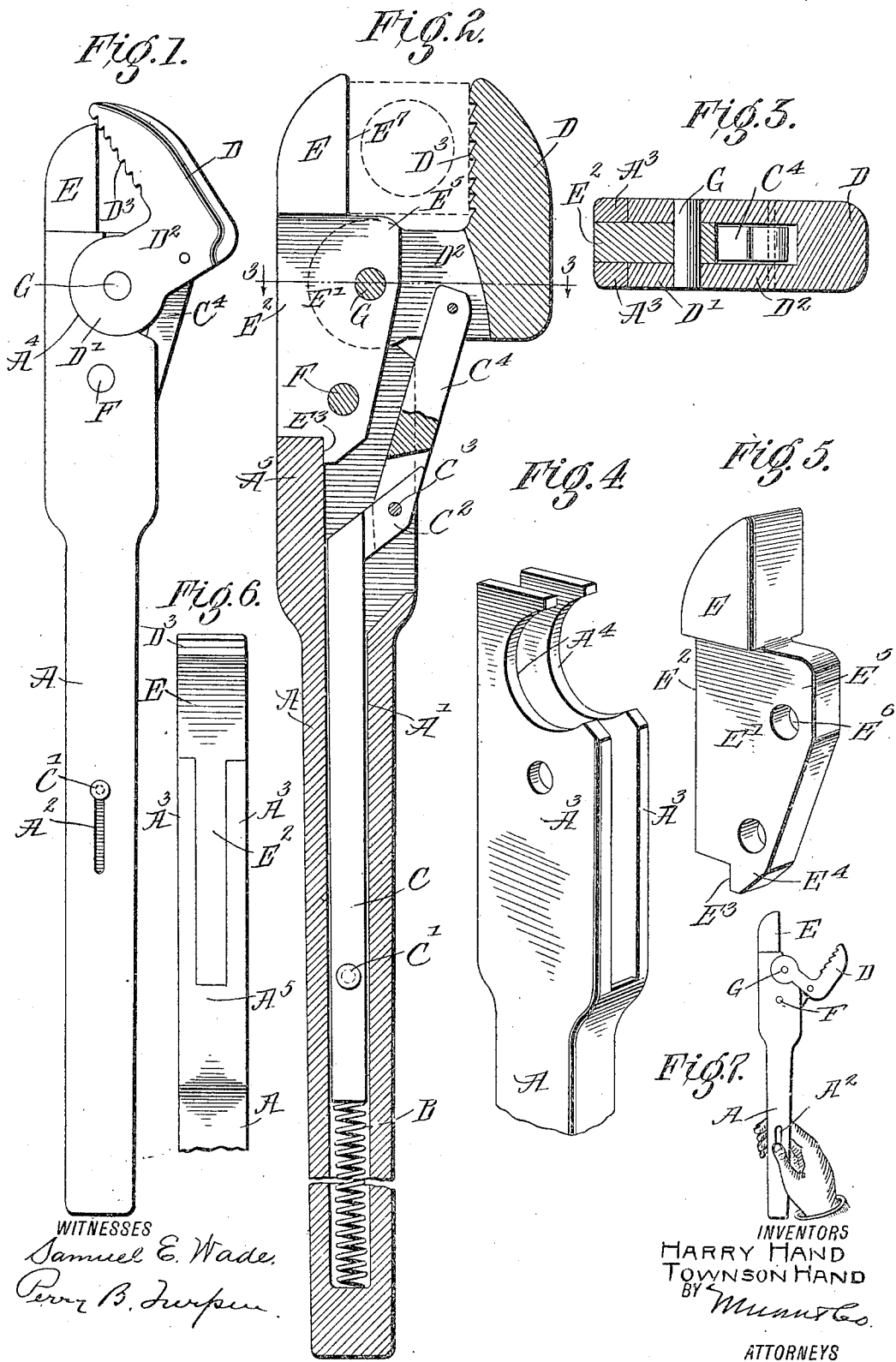


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WRENCH.
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WRENCH.

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To all whom it may concern:

Be it known that we, HARRY HAND and TOWNSON HAND, citizens of the United States, and residents of Seattle, in the county of King and State of Washington, have made certain new and useful Improvements in Wrenches, of which the following is a specification.

This invention is an improvement in wrenches and has for an object to provide a simple, novel construction of wrench which can be used either as a pipe wrench or for turning nuts; and the invention consists in certain novel constructions and combinations of parts as will be hereinafter described and claimed.

In the drawing Figure 1 is a side view, and Fig. 2 is a vertical longitudinal section, partly broken away, of a wrench embodying the invention. Fig. 3 is a cross section on about line 3—3 of Fig. 2. Fig. 4 is a detail perspective view of the upper portion of the wrench bar. Fig. 5 is a detail perspective view of the fixed jaw, and Fig. 6 is a detail edge view of the upper portion of the wrench looking at the outer side of the fixed jaw. Fig. 7 is a side view of the wrench with the loose jaw thrown wide open.

The wrench bar A, is made hollow or with a longitudinal bore at A', in the lower end of which is seated a spring B, which presses the jaw operating slide C normally outward to the position shown in Fig. 1, to permit the said slide to be retracted as shown in Fig. 2, for opening the movable jaw D of the wrench. The slide may be operated in any suitable manner and we have shown it provided with a handle pin C', extending through a slot A² in the handle bar to permit the movement of the slide C between the positions shown in Figs. 1 and 2 of the drawing.

At its upper end the wrench bar A is bifurcated forming the similar side plates A³ rounded on their inner edges near their upper ends at A⁴ to form a back bearing for the knuckles D' on the jaw D and spaced apart at their rear sides to receive between them the shank plate E' of the fixed jaw E. This shank plate coincides at its outer edge E² with the outer edges of the side plates A³ forming the head of the wrench bar, and at its lower end the shank E' is shouldered at E³ forming an extension E⁴ which bears against the inner face of the back plate A⁵

of the wrench head, as shown in Fig. 2, and braces the fixed jaw E firmly in position as shown in Fig. 2 of the drawing. This fixed jaw is held in place by a pin F passing through its shank E' and through the side plates A³ of the wrench head, and the shank E' is provided with an inwardly projecting extension E⁵ which coöperates with the knuckles D' of the jaw D and has an opening E⁶ which registers with similar openings in the stem D² of the jaw D, and receives the pin G which forms a pivot for the movable jaw D of the wrench. This pin G is concentric with the rounded edges A⁴ of the side plates of the wrench head, and the edges of the knuckle D' conform to and move closely against the rounded edges A⁴ of the side plates so the pressure on the jaw D of the wrench is received by the rounded surfaces of the wrench head as will be understood from Figs. 1, 2 and 4 of the drawing. At the same time the movable jaw D is pivoted directly to the shank of the fixed jaw E, and the one pin F operates to unite or secure both jaws D and E in operative relation in connection with the wrench head.

The jaw D has the jaw face D³ which may preferably be serrated as shown, and is provided with a stem D² at approximately a right angle to the serrated face D³, and the relation of the jaws D and E and the pivot G is such that the serrated face D³ may be opened to a position in which it will lie parallel with the jaw face E' of the fixed jaw E as shown in Fig. 2, so the said jaws will properly operate upon a square or other angular nut.

By the described construction at the head of the wrench the fixed jaw and the movable jaw are conveniently supported and may be removed and replaced by the manipulation of the single pin F, such pin coöperating with the shouldered construction E³ at the lower end of the shank of the fixed jaw in securing the said jaw firmly to the wrench head, and also securing thereto the movable jaw which in turn is carried by the fixed jaw as will be understood from Fig. 2 of the drawing. At the same time the pressure of the knuckles D' of the movable jaw is exerted against the rounded surfaces A⁴ of the side plates of the wrench head as will be seen from Figs. 1, 2 and 4, the whole producing a strong device which may efficiently operate for the desired purpose.

The slide C has at its upper end a forwardly projecting arm C² to which is pivoted at C³ the lower end of the link C⁴, which is pivoted at its upper end between the spaced apart side plates of the stem of the movable jaw D. By depressing the pin C', the jaw D may be opened and the spring B will operate to close the said jaw when pressure on the pin C' is released. The spring thus operates to close the jaw D, and the said jaw may be opened by manipulating the pin C' as before described.

In operation it will be found that the wrench is self adjusting from about one-half inch to about a two inch tap or nut, is so constructed that it has no weak parts to spring or get out of order, and can be made in different sizes to suit the particular purpose for which it is designed.

Manifestly, the connecting link C⁴ may be adjusted as desired, and may for such purpose, if desired, be provided with several openings to receive the pivot pins at the opposite ends thereof.

As before suggested the spring B operates to close the wrench, and when desired or necessary the wrench may be opened by a set screw or knob in the side of the handle, but this is not ordinarily necessary.

We claim—

1. The improvement in wrenches herein described, comprising a handle bar made with a longitudinal bore, and having at its upper end side plates spaced apart and forming a wrench head and having a back plate between the side plates at the lower ends thereof, the said side plates being provided in their inner edges near their upper ends with concave rounded surfaces, a fixed jaw having a shank fitting between the side plates of a wrench head, and provided at its lower end with an extension projecting along the inner side of the upper end of the back plate, means securing the said shank to the wrench head, a movable jaw having a jaw face and a stem at a right angle thereto and provided with side plates lapping on opposite sides of the shank of the fixed jaw and pivoted thereto and provided with convex rounded surfaces abutting the concave surfaces of the side plates of the wrench bar, a slide rod in the hollow wrench bar, a spring below said slide rod for actuating the same in one direction, and connections

between said slide rod and the movable jaw, all substantially as and for the purposes set forth.

2. A wrench comprising a handle bar having side plates spaced apart forming a wrench head, and also having a back plate between the side plates at one end thereof, the said side plates having concave rounded edges, a fixed jaw having a shank between the side plates and provided at its lower end with an extension bearing in rear of the back plate of the handle, means securing the shank to the side plates, a movable jaw pivoted to the said shank concentric with the rounded concave edges of the side plates and having rounded knuckles fitting against said concave edges, and means for operating the movable jaw, substantially as set forth.

3. In a wrench the combination of side plates spaced apart, and having concave rounded edges, a fixed jaw having a shank held between said plates and projecting inwardly beyond said concave rounded edges, and a movable jaw pivoted to said inwardly projecting portion of the shank of the fixed jaw, and having a stem provided with side plates lapping on opposite sides of and pivoted to the fixed jaw and provided with rounded edges abutting those of the side plates, substantially as set forth.

4. The improvement in wrenches herein described comprising a handle bar made with a longitudinal bore and having at its upper end side plates spaced apart, a back plate between the side plates at the lower ends thereof, the side plates being provided above said back plate in their inner edges with concave rounded surfaces, a fixed jaw shank fitting between the side plates of the wrench head, and provided with a lower extension projecting along the inner side of the upper end of the back plate, a movable jaw having a stem provided with side plates lapping on opposite sides of the shank of the fixed jaw, and provided with convex rounded surfaces abutting the concave surfaces of the side plates, and means for operating said movable jaw, substantially as set forth.

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