J. J. A. MILLER.

COMBINATION WRENCH.

APPLICATION FILED DEC. 21, 1917.

1,276,093. Patented Aug. 20, 1918.

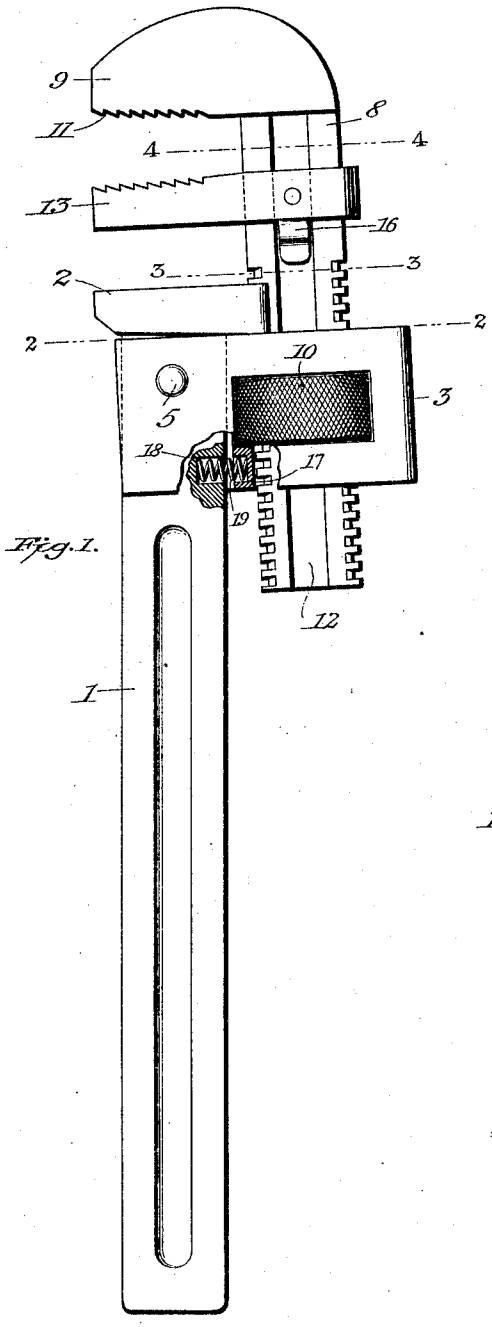

Fig. 1.

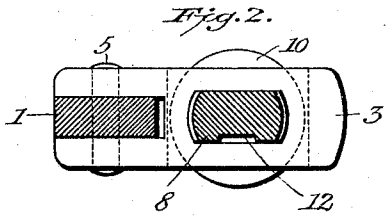

Fig. 2.

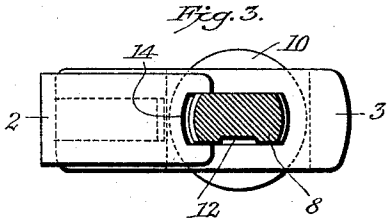

Fig. 3.

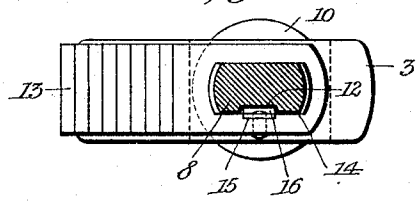

Fig. 4.

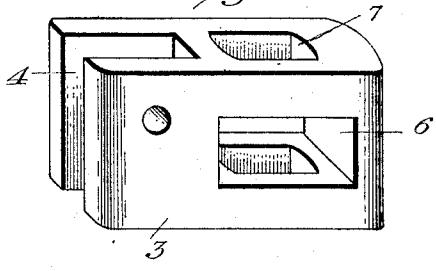

Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN J. A. MILLER, OF DENVER, COLORADO.

COMBINATION-WRENCH.

1,276,093. Specification of Letters Patent. Patented Aug. 20, 1918.

Application filed December 21, 1917. Serial No. 208,251.

To all whom it may concern:

Be it known that I, JOHN J. A. MILLER, a citizen of the United States of America, residing in the city and county of Denver and State of Colorado, have invented a new and useful Combination-Wrench, of which the following is a specification.

This invention relates to improvements in combination wrenches.

The object of the invention is to provide a combined pipe and nut wrench which is so arranged that it may be used for either purpose without either the removal or rearrangement of any of the parts constituting the same, or the addition of other parts.

Further, to provide a wrench having in addition to the usual stationary and adjustable jaw, a third or intermediate jaw, slidably mounted on the shank of the adjustable jaw, the faces of which coöperate respectively with the adjoining faces of the stationary and movable jaw to provide a combined pipe and nut wrench, the main adjustable jaw and the coöperating face of the intermediate jaw being toothed, while the face of the stationary jaw and the cooperating face of the intermediate jaw are smooth.

These objects are accomplished by the implement illustrated in the accompanying drawings in which:

Figure 1 is a side view of the improved combination wrench, parts being broken away for clearer illustration.

Fig. 2 is a horizontal sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a horizontal sectional view on the line 3—3 of Fig. 1.

Fig. 4 is a horizontal sectional view on the line 4—4 of Fig. 1; and

Fig. 5 is a perspective view of the block in which the shank of the adjustable jaw and its operating nut are mounted.

Referring to the accompanying drawings: The numeral 1 indicates the handle of the improved wrench, upon the upper end of which is a jaw 2, the working face of which is smooth, and this jaw may be either rigidly mounted on the said handle, or formed integral therewith.

Upon the handle 1, immediately below and in contact with the jaw 2, is pivotally mounted a block or support 3 having an open slot or recess 4 in its front end, in which fits the handle, and the block is secured to the handle by a pivot pin 5. The portion of the block beyond the handle has a horizontal slot 6, extending through the same, and a vertical slot 7, which intersects the slot 6, the end walls of which are curved in arcs from a common center.

The shank 8 of the movable jaw 9 of the wrench is slidably mounted in the slot 7, the sides of this shank being flat, while its edges are curved from a common center, and formed with square threads. The shank also passes through a threaded aperture in a nut 10, which is mounted in the slot 6, this arrangement of nut and shank and block being in common use, and therefore forming no part of the present invention. The jaw 9, at the upper end of the shank 8, has a toothed working face 11, and the shank is provided on one side with a shallow groove 12.

Upon the shank, between the jaws 2 and 9, is slidably mounted an intermediate jaw 13, of the form shown in Fig. 4, this jaw being provided with a slot 14, through which the shank passes.

The side of the slot 14, facing the groove 12, is formed with a shallow recess 15, in line with the groove 12, in which rests one end of a blade spring 16, this end being riveted to the jaw as shown. The free end of the spring bears frictionally against the face of the groove 12, and thus serves to hold the jaw against accidental slipping when the same is adjusted upon the shank, as will fully appear hereinafter.

The face of the intermediate jaw 13, opposing the jaw 9, is toothed to form in conjunction with the toothed face 11, of the jaw 9 a pipe-gripping medium. The teeth of each face are of ratchet-tooth form, but the teeth on one face are oppositely pitched from those on the other face.

The under face of the jaw 13, which faces the jaw 2, is smooth or untoothed like the said jaw 2, and these two faces constitute the nut-gripping faces of the wrench. The lower portion of the end wall of the slot or recess 4, of the block 3, is formed with a circular socket 17, and a similar socket 18, is formed in the opposing face of the handle, and in these sockets is housed an expansion coil spring 19, which normally holds the shank 8, at a slight inclination to the handle, as shown. The block 3, has a slight pivotal movement on the pin 5, which when

the implement is used as a pipe wrench, permits the jaws to release their grip, and slip upon the pipe in taking a fresh grip, and also effects a clamping of the jaws upon the pipe when pressure upon the handle is exerted in the opposite direction, the handle acting against the action of the spring 19, in the non-gripping movement of the wrench; these features being embodied in wrenches in common use.

In practice, when it is desired to use the implement as a pipe wrench, the nut 10, is operated to raise the jaw 9, far enough to permit back and forth sliding movement of the jaw 13, on the shank 8, and the jaw 13, is then raised to act in conjunction with the jaw 9, to engage the pipe, the jaw 13 being held against backward slipping by the friction-spring 16. The nut 10, is then operated to cause the jaw 2, to engage the under side of the jaw 13 with sufficient pressure to bring the jaws 13 and 9 in gripping engagement with the pipe, after which the operation is the same as in pipe wrenches in common use. When using the implement as a nut wrench, the intermediate jaw 13, is first moved up to engage the jaw 9, and the nut 10 is then operated to bring the jaws 2 and 13 in clamping engagement with the nut, after which the operation is the same as with nut wrenches in common use.

The under face of the jaw 2 is slightly inclined with respect to the adjoining face of the block 3, as clearly shown in Fig. 1, and this inclination permits the free rocking movement of the handle with respect to the block 3, in the practical operation of the wrench in pipe work, as will be understood. The inner end of the jaw 2, is recessed or bifurcated to receive the opposing edge of the shank 8, this construction preventing turning or twisting of the shank or handle with respect to each other.

The style of wrench above described is readily adapted to either class of work for which it is intended, and the change from a pipe wrench to a nut wrench and vice versa, requires only the adjustment of the jaw 13, and the necessary manipulation of the nut 10.

Having described my invention what I claim as new and desire to secure by Letters Patent, is:

1. In a wrench, the combination with a handle having a jaw on its upper end, a support pivotally mounted on said handle, an interiorly toothed nut mounted in said support, and a jaw having a threaded shank portion slidably mounted in said support and extending through and in threaded engagement with said nut, said shank having a shallow groove in one of its sides, of a jaw slidably mounted on said shank between the other jaws and having a slot through which said shank passes, said jaw having a spring secured thereto, the free end of which bears frictionally against the bottom of said groove, the upper face of said slidable jaw and the lower face of the upper jaw being toothed, while the lower face of the slidable jaw and the upper face of the lower jaw are untoothed.

2. In a wrench, the combination with a handle having a jaw on its upper end, the inner end of which is provided with a vertical guideway recess, a support mounted on said handle, an interiorly toothed nut mounted in said support, and a jaw having a threaded shank slidably mounted in said vertical guideway recess and in said support and extending through and in threaded engagement with said nut, said shank having a groove in one of its sides, of a jaw slidably mounted on said shank between the other jaws, and having a spring which bears frictionally against the bottom of the groove in said shank, one face of the intermediate jaw and the coöperating face of one of the other jaws being toothed.

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

JOHN J. A. MILLER.

Witnesses:
G. SARGENT ELLIOTT,
ELIZABETH SMITH.