

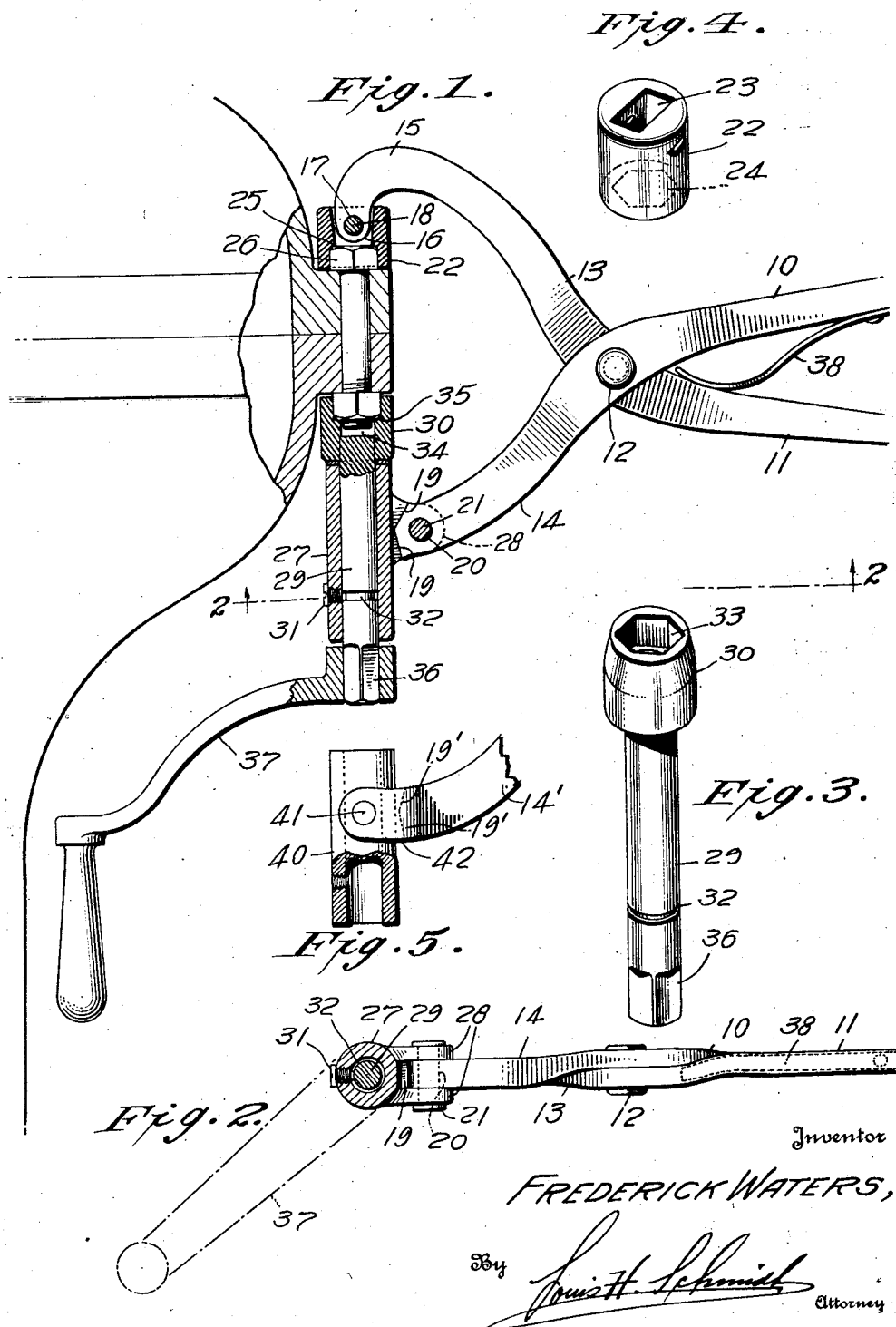
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BOLT HOLDING WRENCH

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UNITED STATES PATENT OFFICE.

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BOLT-HOLDING WRENCH.

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My invention relates to a double socket and bolt-holding wrench, one of its objects being to provide a simple, inexpensive and highly efficient tool that will securely hold a bolt in position, prevent its rotation and at the same time therewith, rotate the nut for locking or removing it. A device of this kind may be very effectively used for placing or removing the nuts from the bolts of engine crank cases, for example, there being quite a number of such bolts that pass through overlapping flanges of the engine crank case. With my improved wrench the bolt head is not only securely held within the bolt holes, but the nut is rigidly held in its proper position so that pressure may be applied thereon, which facilitates its placement or removal from the bolt. The scope of my invention extends to whatever construction may be defined by or included within the terms or language of the appended claims.

In the drawing:

Figure 1 is a side elevation, parts broken away, illustrating my socket wrench and bolt-holding device;

Figure 2 is a transverse sectional view thereof taken on the line 2—2 of Figure 1;

Figure 3 is a view in perspective of the rotatable socket forming a part of my invention;

Figure 4 is a view in perspective of the relatively stationary socket, and

Figure 5 is a detail side view, partially in section, of another form of sleeve in connection with my invention.

My invention, in the form or embodiment shown in the drawing and briefly described, comprises a pair of cross handles, 10 and 11, pivoted as at 12, and extending beyond the pivot, 12, forming somewhat curved jaws, 13 and 14.

The jaw, 13, is formed with a goose neck portion, 15, terminating in a rounded end, 16, and is provided near this end portion with an opening, 17, for receiving a pivot pin, 18. The end of the jaw, 14, is provided with a pair of angularly disposed flat faces or surfaces, 19, and adjacent to these flat faces is provided an opening, 20, for the reception of a pivot pin or rivet, 21.

Loosely mounted to the pivot pin or rivet, 18, is a socket, 22, embracing the end of the gooseneck portion, 15, of the handle, 11, which is provided on its upper end with a rectangular opening, 23, and is provided on

its lower end with a polygonal opening, 24. As is illustrated in Figure 1 of the accompanying drawing, there is but a relatively narrow space or clearance between the end of the goose neck portion, 15, and the sides of the rectangular opening, 23, in the socket, 22, for the purpose of permitting the socket, 22, to move about its pivot but slightly for a purpose to be hereinafter described. A shoulder portion, 25, is formed within the socket, 22, for the purpose of forming the abutment for the head, 26, of the bolt for permitting pressure to be applied against the head, when my improved wrench is being operated.

Opposite to the socket member, 22, and in alignment therewith, I provide a rotatably mounted socket which is suitably supported with respect to the jaw, 14, as to permit its free rotation and angular deflection, as will be hereinafter more fully pointed out.

A sleeve, 27, is provided with a pair of outwardly extending ears, 28, which are spaced in such a manner as to be firmly supported by the end of the jaw, 14, and pivotally held by means of the pivot pin or rivet, 21, the pivotal connection between the ears, 28, and the handle end, 14, being to one side of the sleeve. The ears, 28, are preferably formed integrally with the sleeve, 27, located at a point substantially midway its length. Within the sleeve, 27, is rotatably mounted the reduced end or shank portion, 29, of the rotatable head, 30, which is prevented from endwise movement by means of the screw, 31, carried by the sleeve, 27, and the annular groove, 32, located in the reduced shank portion, 29.

The end of the head portion, 30 of the rotatable member is provided with a polygonal socket or depression, 33, which is adapted to conform to the particular size or design of nut to be used. An opening or depression, 34, of a smaller diameter than the depression, 33, is formed adjacent to the polygonal opening, 33, for receiving the end of the bolt, which would protrude from its respective nut. The shoulder portion, 35, in the head, 30, forms a stop or abutment for the outer end of the nut, so that there may be clearance between the face of the head, 30, and the surface against which the nut bears. This space, it will be readily seen, will permit the inward pressure to be applied to the nut regardless of how tight the nut may be screwed into position.

On the extreme end of the shank or reduced portion, 29, is a squared portion, 36, for the purpose of receiving a suitable handle, 37, whereby the nut may be readily actuated as for screwing it into position or removing it therefrom. By reason of the fact that the socket, 22, is in alignment with the longitudinal axis of the shank portion, 29, of the rotatable head, 30, pressure in a direct line may be maintained regardless of the relative position between the handle, 37, and the socket, 22.

A very important feature of my device resides in the novel means for permitting the oppositely disposed and axially aligning polygonal sockets to remain in alignment regardless of the separation of the sockets which will permit this device to operate effectually for various sized bolts. This is, of course, accomplished by the movement of the socket, 22, within its oblong opening, 23, and the swinging of the sleeve, 26, with respect to the pin, 21. The flat faces, 19, on the extreme end of the jaw, 14, are adapted to contact with the adjacent end of the sleeve, 27, for limiting the extreme movements of the sleeve, 27.

To facilitate the ready removal of the sockets, 22, and 30, from their co-acting bolt head and nut, I provide a spring, 38, which is securely fastened to the handle, 10, in any desired location.

In the embodiment of my invention, illustrated in Figure 5, I provide the sleeve, 40, with a pair of oppositely disposed pins or trunnions, 41, which are adapted to pass through ear portions, 42, formed integral with the curved jaw, 14'. The angular surfaces, 19', are, it will be readily seen, similar to the surfaces, 19, in Figure 1. By means of a construction as shown in Figure 5, the pressure between the oppositely disposed sockets, 22 and 30, is centrally aligning.

I claim:

1. A bolt-holding wrench, comprising crossed pivotally connected handles, a bolt head engaging socket pivotally connected to the operative end of one of the handles, an elongated sleeve pivotally supported at a

point intermediate its ends from the operative end of the other said handle, a shank rotatable in the sleeve and formed at one end to provide a nut receiving socket and at the opposite end with an operating connection, and means to prevent endwise movement of the shank in the sleeve, the pivotal mounting of the socket on one handle and the sleeve on the other handle permitting these parts to maintain operative alignment without regard to the spaced distance of the handle ends.

2. A bolt-holding wrench comprising crossed pivotally-connected handles, a bolt-head engaging socket carried by the end of one of the handles and having a limited swinging connection therewith, the engagement of the socket and handle being in line with the longitudinal axis of the socket to maintain direct line pressure in any relative positions of the handle and socket, an elongated sleeve, a nut-socket carrying spindle rotatably mounted in the sleeve and formed beyond one end of the sleeve with an operating connection, and a pivotal connection between said sleeve and the terminal of the remaining handle, said connection being arranged to one side of the sleeve to permit a swinging movement of the sleeve limited only by the handle.

3. A bolt holding wrench comprising crossed pivotally-connected handles, a bolt-head engaging socket pivotally connected to one of the handles with the socket embracing the end of the handle and having a limited free movement relative thereto, an elongated socket having ears projecting therefrom at substantially its mid-length, the end of the remaining handle being pivotally mounted between the ears, a spindle held against other than rotative movement in the sleeve and projecting in both directions beyond the sleeve, one end of the spindle being formed as a nut-engaging socket and the other end as an operating connection.

In testimony whereof I hereunto affix my signature.

FREDERICK WATERS.