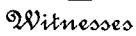


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1,063,706.



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UNITED STATES PATENT OFFICE.

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COMPOUND TOOL.

1,063,706.

Specification of Letters Patent.

Patented June 3, 1913.

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To all whom it may concern:

Be it known that I, WILLIAM T. LONG, citizen of the United States, residing at Sumner, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Compound Tools, of which the following is a specification.

This invention relates to compound tools and has for its object the provision of a simple tool by the use of which a variety of operations may be efficiently performed.

One object of the invention is to provide a wrench which will automatically adjust itself to the nut or bolt to be turned and will not mar the finish of the same nor wear away the sharp angles or corners thereof.

A further object of the invention is to provide a wrench which may be easily operated within a restricted space without causing any undue fatigue on the part of the operator.

The invention also has for its object the provision of a tool which may be produced at a slight cost and will prove efficient and durable in use.

All these stated objects and such other incidental objects as will appear as the description of the invention proceeds are attained in such a device as is illustrated in the accompanying drawings and will be hereinafter fully described.

The invention consists in certain novel features which will be particularly pointed out in the claims at the end of the description.

In the drawings which illustrate the preferred embodiment of the invention: Figure 1 is a view partly in elevation and partly in longitudinal section of my complete tool; Fig. 2 is a longitudinal section taken on the line 2—2 of Fig. 1; Fig. 3 is a detail section taken on the line 3—3 of Fig. 2; Fig. 4 is a detail elevation of a portion of the wrench showing a pipe wrench jaw adapted to be attached thereto; Fig. 5 is a view similar to Fig. 4 and showing the jaws in a different position; Fig. 6 is a detail perspective view of one of the pipe wrench jaws.

In carrying out my invention, I employ a shank or handle 1, the main portion of which is hollow as indicated at 2, said hollow portion being equipped with side plates

3 having longitudinal slots 4 therein as shown. One side wall of each slot is provided with a notch or recess 5 near each end, the purpose of which will presently appear. Slidably mounted within the hollow handle and engaging the slots 4 is a cross head 6 having perforated lugs or ears 7 on one side between which is received the end of a screw driver or similar tool 8, the said tool being pivotally attached to the said lugs or ears by a pivot pin or bolt 9 inserted through the same as clearly shown in Fig. 2. The said lugs or ears have short flanges or ribs 10 at their inner edges which engage the side walls of the slots 4 so as to guide the cross head in its movement longitudinally of the handle when the screw driver is being projected or retracted. The cross head is further provided with ribs 11 at its extremity corresponding to the ribs 10 and likewise engaging the slots 4, the body of the cross head being disposed at one side of the slot as shown most clearly in Fig. 1. Extending through the cross head is an angular sleeve 12 which is adapted to move along the slots 4 and is projected into engagement with the recesses 5 by a spring 13 disposed between itself and the body of the cross head as shown clearly in Fig. 1. Cover plates or finger pieces 14 are threaded into the ends of the angular sleeve 12 and extend over the slots 4 to engage the outer faces of the handle as shown in Figs. 2 and 3, said cover plates or finger pieces also serving to retain the angular sleeves within the handle. When the screw driver or other tool is withdrawn into the handle, the sleeve 12 engages the upper recess 5 and thereby serves as a locking pin to hold the tool retracted. Should it be desired to use the tool, the thumb pieces of cover plates 14 are grasped and moved laterally against the tension of the spring 13 so as to release the angular sleeve or locking pin from the recesses 5 after which the tool is moved longitudinally until the cross head and locking pin reach the outer ends of the slots 4 whereupon the spring 13 will at once project the angular sleeve or locking pin into engagement with the lower recesses 5 and thereby hold the tool projected. The tool may then be used in the ordinary manner without any liability of it collapsing or withdrawing from the work.

The end of the shank 1, distant from the

hollow handle 2 is formed into a gear or circular rack 15 and fits between a pair of cheek plates 16 which form a housing pivoted to the said rack or gear at the center thereof. The upper portions of the cheek plates are formed integral with or secured rigidly to a sleeve 17 which extends longitudinally or in the same plane as the circular rack or gear 15, and between the said sleeve 17 and the circular rack or gear the inner faces of the cheek plates are formed with longitudinal grooves or guides 18 as shown. A base or rack bar 19 is slidably mounted in the grooves 18 and has teeth 20 formed on its outer or lower edge to mesh with the gear 15 whereby when the handle is swung to one side relative movement of the rack bar and the gear will be effected. One end of the base bar is formed integral with or has rigidly secured thereto a foot or boss 21 having a cavity in its inner face as shown at 22. At the opposite end of the said rack bar is provided a short standard or arm 23 having a hollow boss 24 at its free end, the said boss 24 and the cavity 22 constituting bearings for a shank or stem 25 having a jaw 26 formed integral therewith. A spring 27 is housed within the hollow boss 24 so as to bear upon the end of the said stem 30 or shank 25 and hold the same properly seated within the cavity 22 and thereby compensate for wear of the parts so that the jaw and its stem will not become loose through long continued usage. The stem or shank 25 passes through the sleeve 17 and is slightly reduced at diametrically opposite points to provide the flat faces 28 as clearly shown in Figs. 1 and 2, the said flat faces slidably engaging corresponding faces in the lugs or bearings 29 of the jaw 30 which lugs or bearings engage the opposite ends of the sleeve 17 as clearly shown.

It will be readily seen that the stem 25 may be turned to any desired angle in its bearings and in Fig. 5 I have shown the said stem with the jaws thereof turned to an angle of 90 degrees to the handle. The wrench can consequently be used in narrow or restricted spaces without undue strain on any of the parts and without discomfort to the workman.

When it is desired to use the wrench the handle is turned to the position shown in Fig. 1 with the jaw 26 against the nut or head of the bolt to be turned. If the handle be now turned toward the jaw 26 the gear 15 will be caused to travel upon the rack bar 20 and the cheek plates 16 will consequently be caused to move with the handle toward the said jaw. The sleeve 17, being rigid with the cheek plates and fitted between the lugs or bearings 29 of the jaw 30, will impart movement directly to the said jaw so that it will be moved toward the jaw 26 and positively engage the nut so

that the continued movement of the handle will turn the nut. If the handle be moved in the reverse direction, the jaws will be moved apart and the wrench consequently disengaged from the nut so that a fresh grip may be obtained thereon without any mar-70 ring of its surface or any wearing away of its corners. The wrench is consequently especially well adapted for use upon soft metal or upon highly finished nickel plated goods or other delicate parts. 75

It will be noted that in order to apply the wrench to turn up a nut, it is only necessary to engage the rigid jaw against the side of the nut and then move the handle in the direction in which the nut is to be turned. No previous adjustment of the movable jaw is required and none is needed during the operation of the tool. 80

The teeth on the rack bar may be of any desired number or size according to the size of the wrench, and at the end of the rack bar I provide a beveled spur or tooth 31 which is adapted to cooperate with notches 32 formed in the edges of the cheek plates 16 to cut a wire, as will be readily understood. 85 90

The tool may also be used upon pipes, and to this end I form an opening 33 through one or both of the jaws 26 and 30 to receive a suitable retaining pin which also passes through perforated ears 34 on the side plates 35 of a serrated jaw or block 36 which may be fitted against either of the jaws 26 and 30 and held thereon by the said retaining pin. In order to more securely maintain the said auxiliary or serrated jaw in place the side walls 35 thereof are provided with extensions or tongues 37 having curved ends adapted to fit around the stem 25 and the lower edge of the said auxiliary jaw is further provided with a recess or curved notch 38 adapted to fit against the said stem 25. 95 100 105

Having thus described my invention what is claimed as new is:

1. The combination of a rack bar, a housing slidably fitted thereon, a jaw supported by the rack bar and held against movement longitudinally of the same, a jaw engaged by the housing, and a handle pivotally mounted within the housing and engaging the rack bar whereby movement of the handle will effect movement of the jaws relative to each other. 110 115

2. The combination of a base bar, a jaw having a stem swiveled upon the said bar, a second jaw slidably mounted upon said stem, and means engaging the base bar and the said jaw to effect relative movement of the jaws. 120

3. The combination of a base bar having an upturned end, an arm at the opposite end of said bar, a wrench jaw having a stem swiveled in the said upturned end and in the said arm, a spring housed within the said arm and resting against the end of the 125 130

stem, a jaw slidably mounted on the said stem, and means for moving said slidable jaw to and from the first-mentioned jaw.

4. The combination of a rack bar, a pair
5 of wrench jaws mounted thereon, a housing
slidably fitted on the rack bar and engaging
one of the jaws, a handle pivotally mounted
within the housing and having its end
10 formed into a gear engaging the rack bar,
and a beveled tooth on the rack bar, the
housing being provided in one edge with
notches adapted to cooperate with said beveled tooth.

5. A tool comprising a handle, a jaw support,
15 jaws swiveled thereon, a handle arranged to oscillate in the longitudinal plane of the jaw support, and means whereby movement of the handle will cause one of the

jaws to approach or recede from the other jaw.

6. A tool comprising a handle, a jaw support, a jaw having a stem disposed longitudinally of the support and swiveled thereon, a housing inclosing the support and the end of the handle and having a sleeve
20 fitting around the said stem, and a jaw
25 having lugs engaging the ends of said sleeve and having a slidable engagement with the said stem but held against rotation upon the said stem.

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

WILLIAM T. LONG. [L. s.]

Witnesses:

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