K. PETERSON.

WRENCH.

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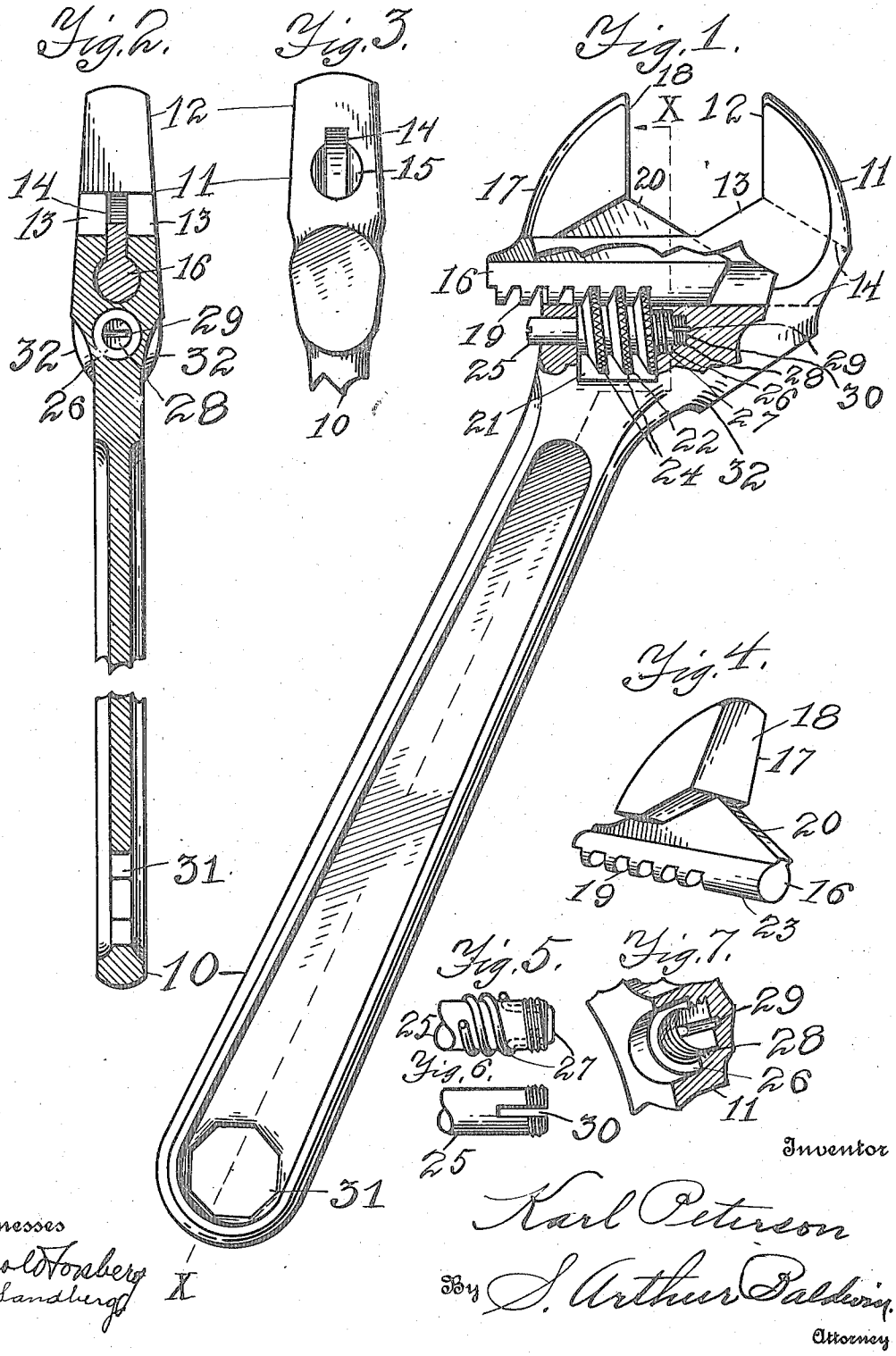

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UNITED STATES PATENT OFFICE.

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WRENCH.

1,133,236. Specification of Letters Patent. Patented Mar. 23, 1915.

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To all whom it may concern:

Be it known that I, KARL PETERSON, citizen of the United States, residing at the city of Jamestown, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Wrenches, of which the following, taken in connection with the accompanying drawings, is a specification.

The invention relates to improvements on adjustable jaw wrenches for bolt nuts; and the object of the invention is to provide a simple adjustable jaw wrench of great strength which fits the faces of a hexagonal nut as well as a square nut and also has a positive adjustment which is not changed by the dropping of the wrench; and the invention consists in a combination arrangement of the parts as shown in this specification and the accompanying drawings.

In the drawings, Figure 1 is a sidewise elevation of the wrench with open jaws, a portion of the wrench head being broken away to show the construction of the same. Fig. 2 is a lengthwise sectional view at line X X in Fig. 1 with the worm and its holding screw and spring removed showing the seat for the spring. Fig. 3 is an edgewise elevation of the head of the wrench showing the hammer head on the same. Fig. 4 is a side elevation of the adjustable jaw removed from the wrench. Fig. 5 is a detail elevation of the inner end of the holding screw for the adjusting worm showing the coil spring in position thereon and the locking bend in the same; Fig. 6 is an elevation of said inner end of the holding screw without the spring and showing the open ended slot; and Fig. 7 is a perspective and sectional view of the inner end of the threaded hole for the screw which holds the adjusting worm showing the groove in the inner end of the same which receives the locking bend of the coil spring and thereby prevents the screw from turning while turning the worm.

Like characters of reference refer to corresponding parts in the several views.

The wrench belongs to the class of adjustable jaw wrenches in which one of the jaws is a fixed jaw integral with the handle of the wrench, and the other jaw is adjustably placed opposite said fixed jaw. The wrench therefore consists of a handle 10 which is preferably placed at an angle from the face of the jaws instead of in line therewith so that a longer sweep is given to the wrench in turning a bolt nut.

The wrench head 11 has the fixed jaw 12 thereon, the inner face of the jaw having angular braces 12 to strengthen the same and also to conform to one side of a hexagonal nut thereby fitting more closely to the hexagonal nut and enabling the user of the wrench to exert greater power upon the nut. The main office, however, of the braces 13 is to strengthen the fixed jaw 12 since it is at this angle that the wrench jaw is weakest and most likely to break. As shown in Fig. 2, these braces 13 extend from the jaw 12 onto the head 11 at each side of a central slot 14.

The central slot 14 in the wrench head 11 extends down to a crosswise opening 15 which is larger than said slot 14 and preferably circular in form to slidably mount therein the toothed extension 16 of the movable jaw 17. The jaw 17 comprises the face portion 18, the extension 16 with the tooth rack 19 on its under side. The extension 16 slidably fits within the slot 14 and the larger opening 15 and is preferably formed with an opposite angular brace 20 which fits between the braces 13 and conforms to the face of a hexagonal nut adjacent to the face engaged by the braces 13. The jaw 17 is adjusted by means of the worm 22 which is revolubly mounted in an opening 21 in the wrench head 11 on a screw 25 which extends through the worm 22. The toothed rack 19 does not extend the whole length of the under side of the extension 16, the end 23 being left blank so that as the worm 22 is revolved it will strike against said blank portion 23 and thereby form a positive stop to the outward movement of the jaw 16 so that it cannot be run out of an engagement with the worm 22 and be lost.

The screw 25 extends from one side of the head 11 through the worm 22 and opening 21 and an additional opening 26 in the wall of the opening 21 and around the screw 25 within which opening 26 a coil spring 27 is placed to press against the worm 22 so that said worm will be under constant tension and in consequence the jaw 16 cannot change position. Also on account of this spring holding the worm 22 it is constantly ready to be turned in either direction aiding

in the turning of the worm by preventing its binding. The worm 22 fits fairly closely within the opening 21 so that it cannot be moved endwise by the spring 27, said spring only acting as a tension and to prevent binding.

The turning of the worm 22 is apt to loosen the screw 25 thereby causing said screw to drop out and be lost destroying the usefulness of the wrench. In order that the screw 25 may be locked in position within the threaded hole 28 in the head 11, a crosswise groove 29 is provided in the inner end of said hole 28, by a simple cut with a steel broach of the size of the screw 25, and the inner end of the screw 25 is provided with an open ended slot 30 to receive therein a locking bend 31 on the end of the coil spring 27, the spring 27 being formed on its inner end to fit within the slot 30 and groove 29, being pressed into the same by the worm 22 so that the screw 25 is locked by said spring 27 yet permitting the turning of the screw 25 when sufficient force is used upon the same. The spring 27 accordingly performs a dual function, namely, to not only tension the worm but also to hold the screw against rotation.

It will be noted that on the movable jaw 17 as shown in Fig. 4, the enlarged extension 16 on its lower edge projects out equidistant each side of said jaw and has the rack 19 on its lower side with the positive stop 23. This arrangement of the jaw and rack with the worm 22 gives great strength to said movable jaw balancing its action so that it never bends and is always ready for adjustment and the spring 27 holds the worm 22 in tension so that the jaw 17 cannot get out of adjustment. The edges of the worm 22 are preferably knurled at 24 so as to be easily turned by the fingers or the user.

Since it is often necessary to start bolts by driving them, a hammer head face 32 is provided on the under side of the head 11 in the position where the blow will cause the least strain.

A hole 31 is provided in the opposite end of the wrench handle 10 from the head 11 for hanging the wrench and in order that said wrench may be ready for instantaneous use without the adjusting of the jaws for the size nut most common in use, for example, a one inch nut, said hole 31 is made hexagonal and of the size most desired.

I claim as new:

1. In a wrench having a head provided with a rigid jaw, and a slidable jaw having teeth, a screw threaded in the head, a worm rotatable on the screw and engaged with said teeth, and combined spring means to both tension the worm and to hold the screw against rotation.

2. In a wrench having a head provided with a rigid jaw, and a slidable jaw having teeth, a screw threaded in the head, a worm rotatable on the screw and engaged with said teeth, said head having a recessed part, and a spring encircling the screw and having one end abutting the worm and having a portion thereof engaged in the recessed part to hold the screw against rotation.

3. In a wrench having a head provided with a rigid jaw, and a slidable jaw having teeth, a screw threaded in the head, a worm rotatable on the screw and engaged with said teeth, said head having a recess arranged opposite to the inner end of the screw and the screw having a slot in its said inner end, and a coil spring encircling the screw and abutting the worm at one end and having its other end formed with a lateral part which engages in the slot of the screw and in said recess of the head.

4. A wrench comprising a handle having a head at one end at an angle thereto, a fixed jaw on said head, said head having an angular crosswise slot with an enlarged opening extending through said head beneath said fixed jaw, a movable jaw having an extension to slidably fit within said slot and enlarged opening in said head, rack teeth on the under side of said enlarged portion of said movable jaw, said head having an opening therethrough at right angles to said crosswise slot and opening into the same and a hole through the end walls of said opening, the inner end of said hole threaded and a screw in said hole, a worm revolubly mounted on said screw in said opening, a coil spring mounted in an opening around said screw in the wall adjacent the end of said worm to give tension to said worm, a locking projection on said spring, the inner end of said screw having an open ended slot to receive said locking projection, and the inner end of said threaded hole having a groove therein to receive said locking projection of said spring to hold said screw against turning by the turning of said worm.

In testimony whereof I have affixed my signature in the presence of two witnesses.

KARL PETERSON.

Witnesses:

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