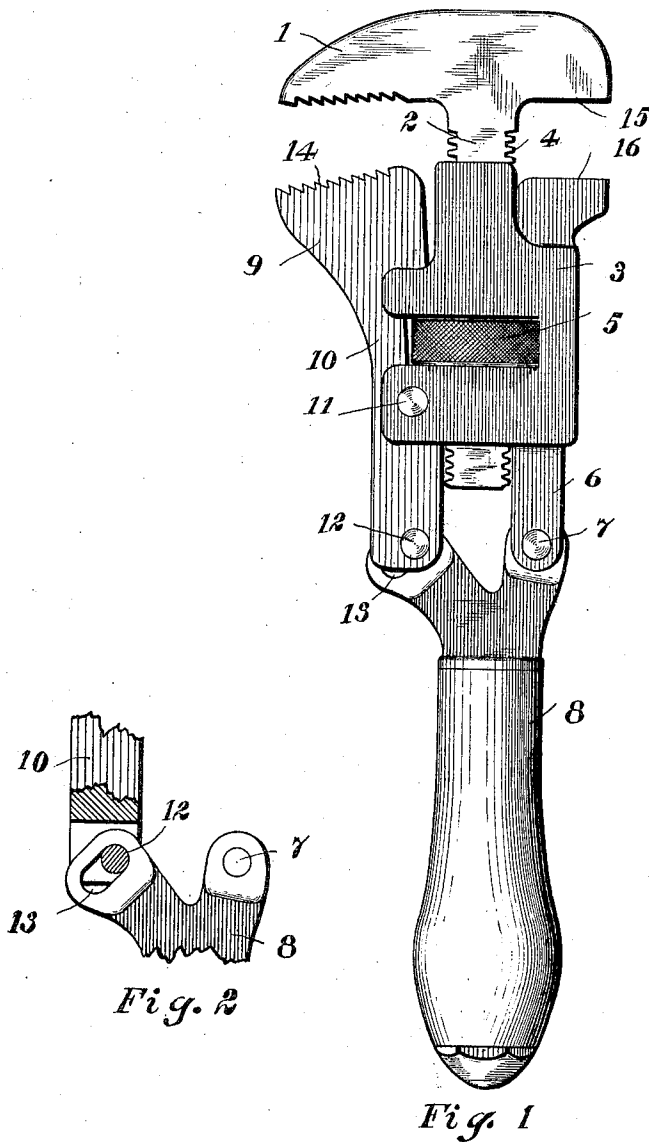


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WRENCH.

APPLICATION FILED JAN. 29, 1912.

1,031,070.

Patented July 2, 1912.



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UNITED STATES PATENT OFFICE.

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WRENCH.

1,031,070.

Specification of Letters Patent.

Patented July 2, 1912.

Application filed January 29, 1912. Serial No. 674,144.

To all whom it may concern:

Be it known that I, THOMAS J. KENNEL, a citizen of the United States, residing at Middletown, Butler county, Ohio, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

This invention relates to improvements in that class of wrenches for use on pipes and other circular objects and provided with a movable jaw arranged, through a lever action of the handle, to increase the biting effect of the jaws when power is applied to the handle.

The invention will be readily understood from the following description taken in connection with the accompanying drawing in which:—

Figure 1 is a side elevation of a wrench exemplifying my invention; and Fig. 2 a side view of a portion of the handle shown in conjunction with a portion of the pivoted jaw.

In the drawing:—1, indicates the fixed jaw of the wrench, serrated as usual in pipe wrenches: 2, a rigid shank projecting from the fixed jaw: 3, a housing arranged to slide on the shank and adapted to carry the pivoted jaw: 4, a thread formed upon the shank: 5, a nut engaging the threaded shank and disposed within a slot in the housing and adapted to move the housing to and from the fixed jaw: 6, a rigid projection from the housing, parallel with the shank: 7, a pivot carried by the projection 6: 8, a handle pivoted on pivot 7: 9, the pivoted jaw of the wrench: 10, an arm projecting from the pivoted jaw substantially parallel with projection 6: 11, a pivot uniting the arm to the housing in such manner that the pivoted jaw may oscillate a slight distance to and from shank 2: 12, a pin in the end of the arm of the pivoted jaw, parallel with pivot 7: 13, a cam-slot carried by the pivoted end of the handle and engaging pin 12 and adapted when the handle is moved in the working direction to move pin 12 farther from pivot 7 and move the pivoted jaw closer to shank 2: 14, the serrations of the pivoted jaw, the same being arranged in a plane at an angle to the plane of the serrated face of fixed jaw 1 so that, when the pivoted jaw moves closer to shank 2 the distance between the two jaws will be lessened: 15, a projection laterally from shank 2 in a direction opposite the fixed jaw: and 16, a

rigid projection from that end of the housing nearest projection 15, and at the same side of the shank, the opposing faces of projections 15 and 16 being parallel with each other.

Assume that the wrench be applied to a pipe and that nut 5 be so adjusted as to cause the pipe to be gripped by the jaws; in other words, that the wrench is adjusted to suit the size of the pipe, as is usual in adjustable pipe wrenches. If, now, the handle be moved in the working direction, to the left in the drawing, the handle will rock on pivot 7, and the cam-slot will force the lower end of arm 10 to the left and cause the pivoted jaw to move toward the shank and cause serrated face 14 of the movable jaw to approach the serrated face of the fixed jaw thus firmly gripping the pipe. The greater the working power applied to the handle the more aggressive will be the grip of the jaws upon the pipe. When the handle is moved in the idle direction, to the right in the drawing, the effect of the cam-slot is to open the jaws and relieve the grip upon the pipe and permit the wrench to turn backward, the wrench thus being capable of a ratchet action whereby it may move idly on the back stroke but grip the pipe aggressively on the forward stroke. The projections 15 and 16 form smooth parallel-faced jaws, adjustable as to distance between them, the purpose of these jaws being to permit the wrench to be employed as a tap wrench.

While it is not new to arrange pipe wrenches, and even adjustable pipe wrenches, in such manner that the working movement of a pivoted handle serves to increase the grip of the jaws of the wrench, the present device will be found to possess special merit by reason of its simplicity and its certainty of action, and by reason of the fact that the rocking movement of the pivoted jaw calls for such slight rocking of the handle as not to bring about to any appreciable extent an unfamiliar and confusing action of the implement in the hand of the user.

It is to be particularly observed that in my improved wrench the increased gripping power due to the inward rocking of jaw 9, on account of the jaw being engaged with the pipe, is independent of the pivotal movement of the handle, that is to say, if the handle were not connected with the movable jaw the grip upon the pipe would in-

crease as power is applied to turn the pipe, the serrated face 14 of the movable jaw swinging inward with a wedging action on the pipe, this backward swinging motion 5 being rendered possible by the location of pivot 11 at some distance from the serrated face 14, the active portion of the pivoted jaw thus being an inwardly and outwardly swinging arm. But, in addition to this, the 10 pivotal motion of the handle serves also in swinging the movable jaw to more firmly gripping position when power is applied to the handle in working direction. The two systems, the serrated pivoted jaw capable of 15 inward and outward motion and the pivoted handle thus supplementing each other.

I claim:—

A wrench comprising, a fixed serrated jaw, a shank projecting from said jaw and 20 at right angles to the serrated face thereof,

a housing slidable upon said shank to and from said serrated jaw, means for adjusting the housing along the shank, a lever pivoted to the housing and carrying at its end nearest said serrated jaw a jaw having a serrated face disposed opposite to the serrated face of the first-mentioned jaw and at an inwardly converging angle thereto so that said pivoted jaw may swing toward the shank and lessen the distance between the 30 two serrated jaws, a pin carried by the end of said lever opposite its serrated jaw, and a handle pivoted to the housing and having a cam-slot engaging said pin, substantially as set forth.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."