

L. ROTH.
WRENCH.

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1,128,904.

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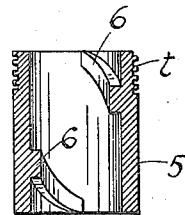
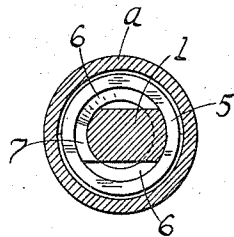
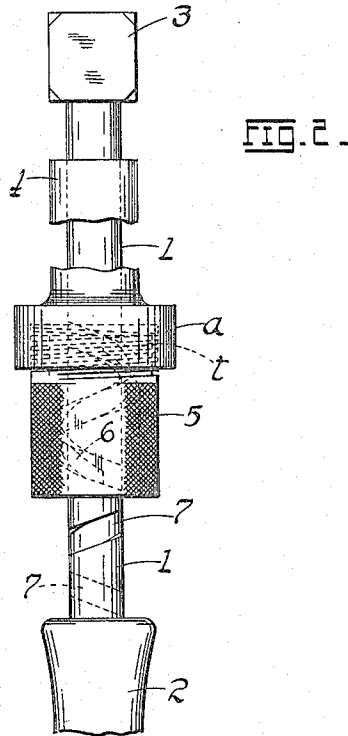
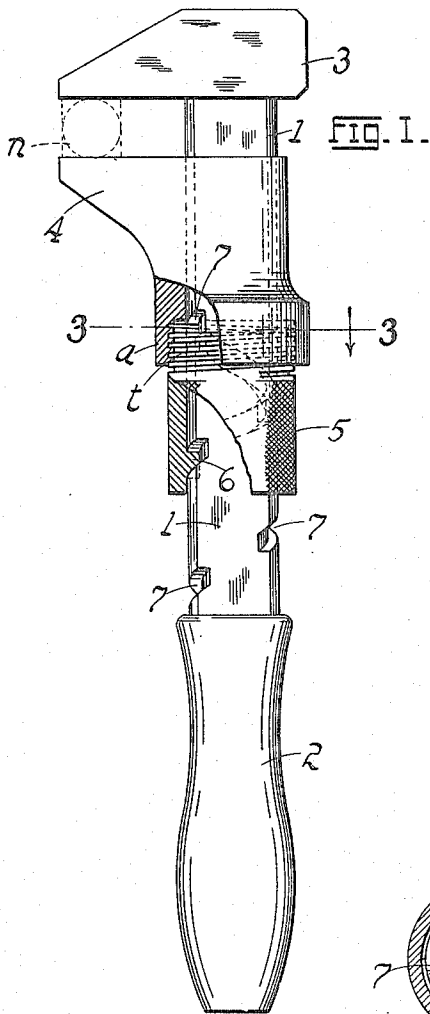


FIG. 3.

FIG. 4.

WITNESSES:

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WRENCH.

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To all whom it may concern:

Be it known that I, LUDWIG ROTH, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Wrenches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in wrenches; and it consists in the novel features of construction more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the wrench with parts broken away; Fig. 2 is an edge view thereof, with part of the handle portion broken away; Fig. 3 is a cross-section on the line 3—3 of Fig. 1; and Fig. 4 is a longitudinal middle section of the jaw-adjusting nut, detached.

The object of my invention is to construct a quick-adjustment nut wrench (though its principle of construction may likewise be applied to pipe wrenches) which will be simple in construction; one which can be readily manipulated; one which has a firm and positive grip on the nut and will not slip; and one possessing further and other advantages better apparent from a detailed description of the invention, which is as follows:—

Referring to the drawings, 1 represents a lever, the same constituting the shank of the tool, and terminating at one end in a handle 2 and at the opposite end in a fixed or stationary jaw 3. The cross-section of the shank is substantially oblong as usual, the shank being traversed by the movable or sliding jaw 4. In the present embodiment of my invention the jaw 4 is provided with a socket *a* screw-threaded interiorly, the socket opening toward the handle 2. The socket receives the adjacent end of an adjusting nut 5 whose peripheral walls at said end are screw-threaded to engage the screw-threaded portion of the socket of the sliding jaw, the surface of the nut being preferably milled or roughened for purposes of easy manipulation as well understood in the art. The inner wall of the nut 5 is provided with a spiral rib or "thread" 6 which engages the high pitched spiral grooves 7 formed along the narrow faces of the shank 1, the pitch of the grooves 7 being substan-

tially a one-inch pitch. On the other hand the pitch of the outer screw-threads *t* of the nut 5 and of the walls of the socket *a* is a low one, this differential in the pitches between the two screw formations being availed of in the operation of the tool.

The operation of the tool is substantially as follows: It will be seen that by rotating the adjusting nut 5 in proper direction the same will screw or travel along the high-pitch spiral formed by the grooves 7, toward the fixed jaw 3, carrying the sliding jaw 4 with it, in which rotation it will partially screw into the socket *a* of said jaw 4. In this way the jaw 4 may be brought up against a nut *n* engaged by the fixed jaw 3 as shown in Fig. 1, whereupon the nut may be readily turned or manipulated by the wrench. In turning the nut *n* a pressure will of course be exerted against the jaw 4 tending to force the jaw away from the jaw 3, and were the nut 5 to slip, a parting of the jaws 3, 4, would result. For the nut 5 to slip on the shank 1, it would be obliged to turn in a direction to unscrew along the spiral 7, 7, that is to say, to travel toward the handle 2. The turning of the nut 5 however in the direction specified is prevented by the resistance offered thereto by the low-pitched screw threads *t* of the nut, and of the socket *a* of the movable jaw, such resistance resulting from the tendency of the jaw 4 to move toward the jaw 3 with any tendency on the part of the nut 5 to turn in the direction aforesaid, it being obvious that with a turn of the nut 5 in one direction, the jaw 4 is pushed away from the nut, and with a turn of the nut in the opposite direction the jaw is drawn toward the nut (the two members being screwed to one another). It follows from the foregoing that the low-pitch threaded portions *t* of the jaw 4 and socket *a* are instrumental in preventing the slipping of the adjusting nut 5 along the shank 1 in the normal operation of the tool. To release the nut *n* (or bolt head should the wrench be applied to a bolt) the operator rotates the adjusting nut 5 in the opposite direction so as to slide down the shank 1 toward the handle 2 when it will carry the jaw 4 with it, the nut 5 in that movement being of course partly unscrewed from the socket *a*, into which it is however screwed with a reverse rotation of the member 5, the length of the shank 1

being such as to prevent the members *a*, 5, from becoming uncoupled, the member 5 not making a sufficient number of turns to unscrew itself from the socket *a*.

5 The tool while primarily intended for turning nuts, may be used for turning pipes, bolts, and other mechanical devices to which a wrench may ordinarily be applied.

10 Having described my invention, what I claim is:

1. A wrench comprising a shank polygonal in cross-section and terminating at one end in a handle, and at the opposite end in a fixed jaw, a sliding jaw on the shank provided with a screw threaded portion farthest removed from the fixed jaw, the screw-thread being of low pitch, a nut passed over and rotatable about the shank and terminating at one end in a threaded portion engaging the screw-threaded portion of the sliding jaw, a series of grooves on a portion of the faces of the shank disposed along a high pitch spiral inclined in the same direction as the low pitch screw, and an in-

ner spiral rib on the nut engaging said 25 grooves.

2. A wrench comprising a shank substantially oblong in cross-section and terminating at one end in a handle and at the opposite end in a fixed jaw, a sliding jaw on the 30 shank provided with an interiorly screw-threaded socket facing the handle, the screw being of low pitch, a nut passed over and rotatable about the shank and terminating at one end in a peripheral screw-threaded 35 portion engaging the screw-threaded portion of the socket of the sliding jaw, a series of grooves on the narrow faces of the shank disposed along a high pitch spiral inclined in the same direction as the low 40 pitch screw, and an inner spiral rib on the nut engaging said grooves.

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

LUDWIG ROTH.

Witnesses:

EMIL STAREK,
Jos. A. MICHEL.

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