

Oct. 14, 1941.

H. W. SMALL

2,259,216

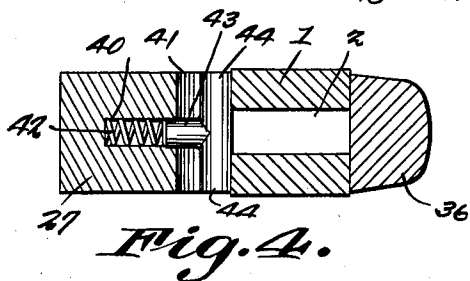
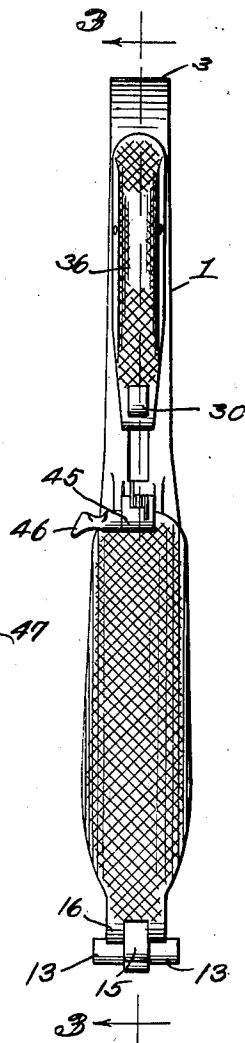
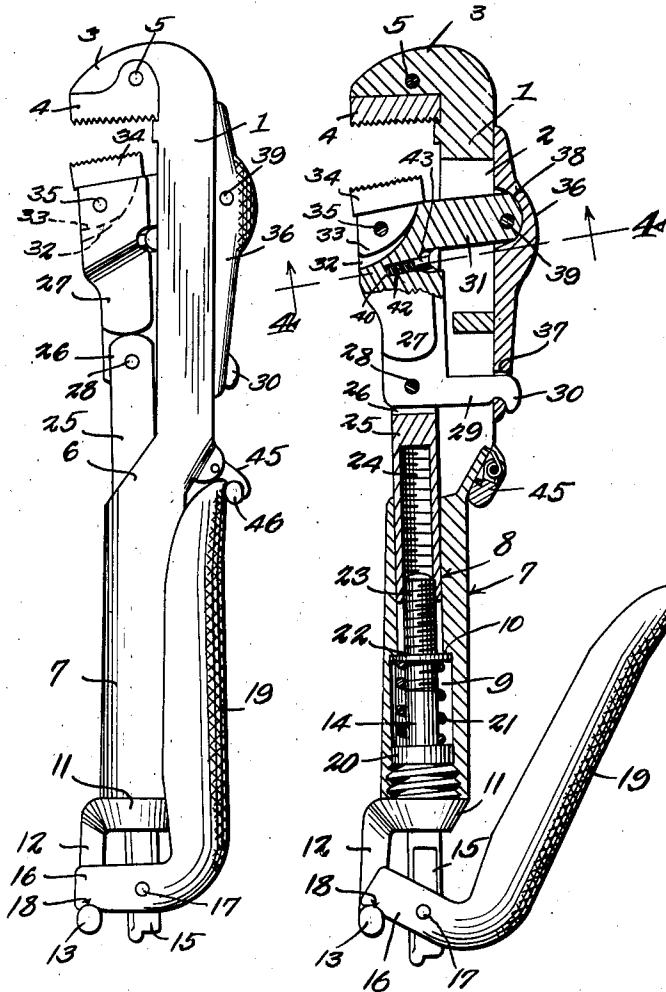
WRENCH

Filed Dec. 30, 1940

*Fig. 1.*

*Fig. 3.*

*Fig. 2.*



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## UNITED STATES PATENT OFFICE

2,259,216

## WRENCH

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Application December 30, 1940, Serial No. 372,415

5 Claims. (Cl. 81—85)

This invention relates to wrenches.

One of its objects is to provide a wrench for use on nuts, pipes or other angular or round objects, the construction being such as to close upon and firmly grip an object while being turned in one direction, but to open and be free to slip back toward its original position when swung in the opposite direction.

Another object is to provide a wrench which can be adjusted quickly to objects of different diameters.

A further object is to provide a means for fastening the jaws of the wrench against movement apart after they have been brought to gripping positions.

A still further object is to provide a wrench which is simple and compact in construction and will not readily get out of order.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawing the preferred form of the invention has been shown.

In said drawing

Figure 1 is a side elevation of the wrench held in closed position.

Figure 2 is an elevation of the back of the wrench.

Figure 3 is a central longitudinal section through the wrench on line 3—3, Figure 2, the locking grip being released and in elevation.

Figure 4 is an enlarged section on line 4—4, Figure 3.

Referring to the figures by characters of reference, 1 designates a shank slotted longitudinally as at 2 and provided at one end with a stationary jaw 3. This jaw can be straddled by a gripping plate 4 held in place detachably by a transverse removable pin 5.

The other end of the shank is offset at 6 and merges into a tubular handle 7 having a longitudinal bore 8 aligned with the center of jaw 3. The outer end of the bore, which is the end farthest removed from jaw 3, is counterbored at 9 to provide a shoulder 10.

A cap in the form of a screw plug 11 is removably seated in the outer end of the counterbore and has an arm 12 extending from its margin and terminating in a head formed by oppositely extended aligned studs 13.

Cap 11 constitutes a guide for a round stem 14 adapted to slide and rotate therein, and the outer end of the stem is flattened at 15 where it is straddled by a fork 16 pivotally connected

thereto at 17. The fork also straddles the arm 12 and has notches 18 adapted to receive the studs 13 as shown.

The fork is integral with and extends at an angle from a grip 19 which is arcuate in cross-section and adapted to move against and extend partly around handle 7 as in Figure 1.

Stem 14 has a collar 20 located in counterbore 9 and providing an abutment for one end of a coiled spring 21 the other end of which thrusts against a ring 22 seated against shoulder 10.

The stem 14 has a screw-threaded end 23 seated in a screw-threaded recess 24 extending in one end of the round shank 25 of a movable jaw. This shank projects from bore 8 and has a terminal fork 26 in which is pivotally mounted one end of a jaw holder 27. Extending from that end of the holder near its pivot 28 is an integral level 29 projecting through slot 2 and terminating in a hook 30. An arm 31 extends from the other end of the holder and also projects through slot 2 and a recess 32 is formed in said end for the reception of a wing 33 projecting from the movable jaw 34. A pivot pin 35 connects the wing to the holder so that a limited swinging movement of jaw 34 relative to its holder is permitted.

A slide 36 is mounted on shank 1 and near one end thereof is an opening 37 into which hook 30 projects. Near the other end of the slide is a recess 38 in which arm 31 is pivotally secured by a pin 39.

A recess 40 is formed in holder 27 and opens into the center of a transverse groove 41 formed in the holder. In this recess is a coiled spring 42 which thrusts against a pin 43 having a thrusting head 44 formed of oppositely extended studs. These studs are substantially semi-cylindrical and have their flat faces pressed yieldingly against shank 1 so as to bridge slot 2. The groove 41 is proportioned to receive the studs when the holder 27 and shank 1 are pressed together.

A spring-restrained catch is pivotally mounted on the offset 6 as shown at 45 and has a finger 46 by which it can be lifted out of normal position. Grip 19 has a notch 47 in its free end portion so located that when the grip is pressed against handle 7, the catch can be released so as to engage in the notch and hold the grip against movement away from the handle.

By swinging grip 19 to position substantially at a right angle to handle 7 after it has been released by raising catch 45, the fork 16 will become disengaged from studs 13 and assume a position astride and parallel with stem end 15. The grip can then be used as a crank or handle and moved in a circle about the axis of stem 14. Thus the stem can be screwed into or out of the bore 24 for feeding the holder 27, jaw 34 and slide 36 from or toward jaw 3. The grip is then

moved to bring its fork 16 astride arm 12 and against the studs 13 as in Figure 3. The wrench is placed with its two jaws at opposite sides of the object to be turned and the object can be loosely engaged with the working faces of the jaws which, as shown, can be toothed or serrated and can converge toward shank 1. The handle 7 and grip 19 are grasped in the hand and pressed toward each other as the wrench is swung in one direction. This causes fork 16 to press against and be fulcrumed on studs 13 and stem 14 to be pressed forward against the action of spring 21. Consequently jaw 34 will press the engaged object firmly against jaw plate 4 and cause the object to move with the wrench. A slight rocking action of jaw 34, its holder 27 and slide 36 will occur to effect a firmer grip, and when pressure on grip 19 is relieved and the wrench swung back to obtain a new grip, the compressed spring 42 will shift the holder 27 and its jaw away from shank 1 and reseat slide 36 on the shank.

Obviously the jaws can be held in tight engagement with the object between them simply by fastening the grip 19 with catch 45.

What is claimed is:

1. A wrench including a longitudinally slotted shank, an offset tubular handle at one end, a stationary jaw at the other end, a shank slidably mounted within the handle, means slidably and rotatably mounted in and projecting beyond the handle for shifting the shank longitudinally relative to the handle, a movable jaw, a holder therefor pivotally connected to said slidable shank, a slide on the slotted portion of the first named shank, arms fixed relative to the holder and pivotally connected to the slide, said arms being extended through and slidable within the slot, yielding means interposed between the slotted shank and the holder for normally pressing the holder and the movable jaw away from the slotted shank and normally maintaining the slide in intimate contact with said shank, and cooperating means on the handle and stem for bodily shifting the movable jaw and its holder toward the other jaw.

2. A wrench including a longitudinally slotted shank, a fixed jaw at one end thereof, an offset tubular handle at the other end, a slide mounted on the slotted shank, a holder slidably engaging said shank, arms extending from the holder and through the slot and pivotally connected to the slide, a movable jaw carried by the holder, yielding means interposed between the shank and holder for maintaining said holder normally pressed away from the shank, a shank pivotally engaged by the holder and slidably mounted within the handle, a stem slidably and rotatably mounted in the handle and adjustably engaging said holder shank, yielding means within the handle and cooperating with the stem for holding the holder and its shank normally pressed toward the fixed jaw, and cooperating means on the stem and handle for shifting the stem and movable jaw against the action of said yielding means.

3. A wrench including a longitudinally slotted shank, a fixed jaw at one end thereof, an offset tubular handle at the other end, a slide mounted on the slotted shank, a holder slidably engaging said shank, arms extending from the holder and through the slot and pivotally connected to the slide, a movable jaw carried by the

holder, yielding means interposed between the shank and holder for maintaining said holder normally pressed away from the shank, a shank pivotally engaged by the holder and slidably mounted within the handle, a stem slidably and rotatably mounted in the handle and adjustably engaging said holder shank, yielding means within the handle and cooperating with the stem for holding the holder and its shank normally pressed toward the fixed jaw, and cooperating means on the stem and handle for shifting the stem and movable jaw against the action of said yielding means, said cooperating means including a finger on the handle having an abutment, a fork fulcrumed on the stem, and a grip extending from the fork and shiftable toward the handle to actuate the fork to thrust against the abutment and shift the stem in one direction.

4. A wrench including a longitudinally slotted shank, a fixed jaw at one end thereof, an offset tubular handle at the other end, a slide mounted on the slotted shank, a holder slidably engaging said shank, arms extending from the holder and through the slot and pivotally connected to the slide, a movable jaw carried by the holder, yielding means interposed between the shank and holder for maintaining said holder normally pressed away from the shank, a shank pivotally engaged by the holder and slidably mounted within the handle, a stem slidably and rotatably mounted in the handle and adjustably engaging said holder shank, yielding means within the handle and cooperating with the stem for holding the holder and its shank normally pressed toward the fixed jaw, and cooperating means on the stem and handle for shifting the stem and movable jaw against the action of said yielding means, said cooperating means including a finger on the handle having an abutment, a fork fulcrumed on the stem, and a grip extending from the fork and shiftable toward the handle to actuate the fork to thrust against the abutment and shift the stem in one direction, said fork being proportioned to move into position astride of and parallel with the stem thereby to release the grip for actuation as a handle to rotate the stem.

5. A wrench including a longitudinally slotted shank, a fixed jaw at one end thereof, an offset tubular handle at the other end, a slide mounted on the slotted shank, a holder slidably engaging said shank, arms extending from the holder and through the slot and pivotally connected to the slide, a movable jaw carried by the holder, yielding means interposed between the shank and holder for maintaining said holder normally pressed away from the shank, a shank pivotally engaged by the holder and slidably mounted within the handle, a stem slidably and rotatably mounted in the handle and adjustably engaging said holder shank, yielding means within the handle and cooperating with the stem for holding the holder and its shank normally pressed toward the fixed jaw, and cooperating means on the stem and handle for shifting the stem and movable jaw against the action of said yielding means, said cooperating means including a finger on the handle having an abutment, a fork fulcrumed on the stem, and a grip extending from the fork and shiftable toward the handle to actuate the fork to thrust against the abutment and shift the stem in one direction, and cooperating means on the grip and slotted shank for fastening the grip out of normal position.

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