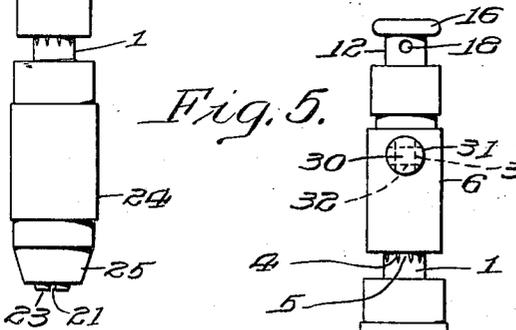
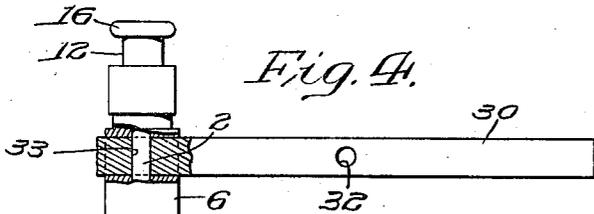
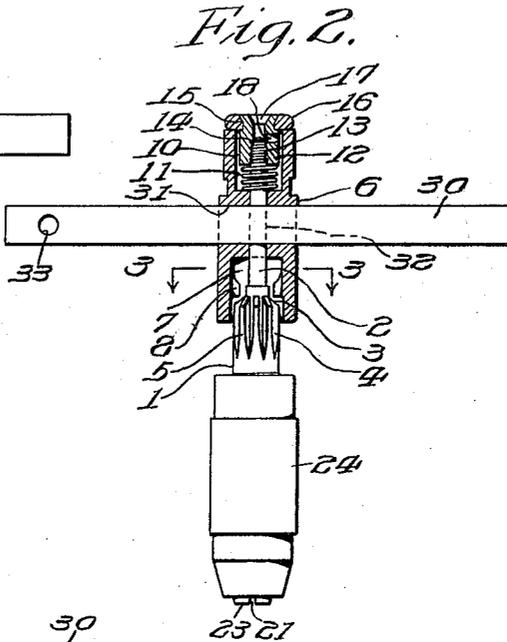
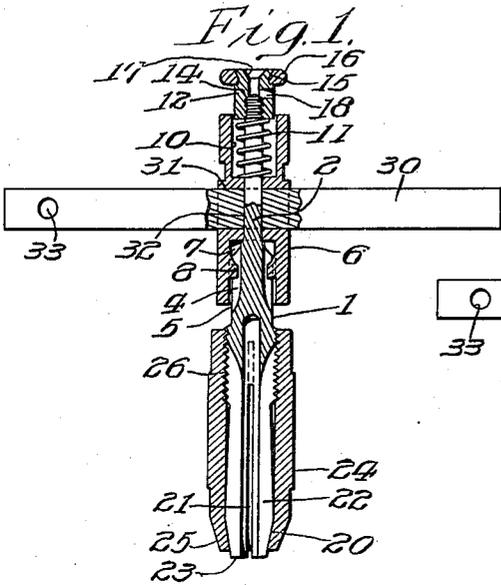


D. J. NORMOYLE.
 WRENCH.
 APPLICATION FILED NOV. 5, 1913.

1,299,764.

Patented Apr. 8, 1919.



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WRENCH.

1,299,764.

Specification of Letters Patent.

Patented Apr. 8, 1919.

Application filed November 5, 1913. Serial No. 799,277.

To all whom it may concern:

Be it known that I, DANIEL J. NORMOYLE, a citizen of the United States, and a resident of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

The main objects of this invention are to provide an improved wrench or device for actuating taps, drills or other tools or devices, and including a spindle and a handle extending transversely with respect thereto, and operative either to transmit motion to the spindle or to be moved independently thereof, and in which the handle may be adjusted to project either in opposite directions, or substantially only in a single direction, from the main or body portion of the wrench, as may be required; and to provide other improvements, as will appear hereinafter.

In the accompanying drawings, Figure 1 is a longitudinal central section of a wrench constructed in accordance with this invention; Fig. 2 a side elevation partly in longitudinal central section of the same, but showing the parts in different relative positions than those occupied in Fig. 1; Fig. 3 a transverse section on the line 3—3 of Fig. 2, looking in the direction of the arrows; Fig. 4 a side elevation partly in longitudinal, central section of the wrench shown in Fig. 1, but with the handle in a different position of adjustment; and Fig. 5 a side elevation of the wrench shown in Figs. 1 and 4, but after having been rotated about its longitudinal axis through 90 degrees from the positions occupied in Figs. 1 and 4.

Referring to the drawings, one embodiment of this invention comprises a wrench including a cylindrical spindle 1, having an upper portion reduced in diameter and forming a cylindrical shank 2, providing an annular shoulder 3 adjoining the lower end of the shank 2. The annular shoulder 3 is provided with a series of longitudinal slots or recesses 4 forming a plurality of teeth 5, extending longitudinally of the spindle 1 and radially with respect thereto, each of which is preferably substantially symmetrical with respect to a plane extending longitudinally through the central portion of the tooth, and coinciding with the longitudinal axis of the spindle 1.

Snugly but rotatively surrounding the shank 2, and movable longitudinally thereof is a sleeve 6, the lower end of which is provided with a substantially cylindrical recess 7 coaxial with the sleeve, and with a plurality of internal teeth 8 arranged in the recess 7 and extending longitudinally of the sleeve 6 and adapted to move freely longitudinally in the recesses 4 and to engage, slidingly, the teeth 5 of the spindle 1, or to be disengaged therefrom by moving the sleeve longitudinally in a direction away from the teeth 5 of the spindle. The longitudinal, external teeth 5 of the spindle 1 and the corresponding longitudinal internal teeth 8 of the sleeve 6 are preferably so constructed that the spindle 1 may be rotated by the sleeve against a resistance in either direction, but the teeth might be so constructed as to transmit motion only in a single direction of rotation.

For holding the sleeve 6 yieldingly in position upon the shank 2, and with its internal teeth 8 normally in engagement with the teeth 5 of the spindle 1, the upper end of the sleeve is provided with a cylindrical recess 10 in which is arranged a spiral spring 11 surrounding the shank 2 and normally held under compression by a nut 12, which is threaded as at 13 upon the upper end of the shank 2, and is held removably in fixed relationship with the shank by being provided with an internal shoulder or abutment 14, which is forced down tightly against the threaded end of the shank 2. The upper end of the nut 12 is reduced in diameter and is expanded in a downwardly tapering central opening 15 in a circular, transversely rounded cap 16, which is freely rotatable with respect to the nut, and the upper surface of which is preferably spaced slightly above the upper end of the nut 12. The upper end of the nut 12 is preferably provided centrally with a longitudinal, inwardly tapering or countersunk recess 17, adapted to receive the dead center of a lathe or other machine tool, and is also preferably provided with a transverse cylindrical recess 18 spaced below the cap 16 and adapted to receive a spanner wrench for rotating the nut with respect to the shank 2.

The lower portion of the spindle 1, below the teeth 5, may be utilized for any desired purpose, but in the embodiment of this invention illustrated is tapered at its lower

end as at 20, and is provided with two longitudinal slots 21—22, arranged at right angles to each other and extending from the lower end of the spindle upwardly to form
 5 four flexible resilient jaws 23, between which a tap or other suitable tool may be clamped by means of a sleeve 24 surrounding the jaws 23, and having a converging lower end
 10 25 arranged to engage the tapering ends of the jaws 23 and having its upper portion provided with internal threads 26 which engage corresponding external threads provided therefor on a slightly enlarged portion of the spindle 1, the arrangement being
 15 such that by rotating the sleeve 24 the tool may be held in position between the jaws or released, as may be desired.

For rotating the sleeve 6 and for moving it longitudinally with respect to the shank 2, and against the pressure of the spring 11, a handle 30 extends loosely through an aperture 31 provided therefor in the central portion of the sleeve, and extending transversely thereof, the handle being provided
 25 with a central cylindrical aperture 32 through which the shank 2 passes freely, and also being provided adjacent one end with a corresponding transverse cylindrical aperture 33, preferably arranged so as to extend in a direction perpendicular to a
 30 plane extending through the longitudinal axis of the handle 30, and the longitudinal axis of the aperture 31 through the central portion of the handle, so that when the handle
 35 is adjusted in either of its positions shown in Figs. 1 and 4, the exposed under portions of the handle will present smooth unbroken surfaces adapted to receive the main pressure of the fingers of the operator.

40 When it is desired to use the wrench in a corner or in a position where the body of the wrench will be close to a wall or other obstruction, the handle may be adjusted longitudinally so as to bring the shank 2
 45 through the aperture 33 adjacent the end of the handle, and so that the handle may project upon one side only of the body of the wrench, as shown in Fig. 4. This adjustment may be accomplished simply by unscrewing the nut 12 and sliding the sleeve 6,
 50 together with the handle 30 and spring 10 off the shank 2, and then moving the handle longitudinally in the sleeve 6 and rotating the handle through 90 degrees about its longitudinal axis to bring the aperture 33 at
 55 the end of the handle into alinement with the longitudinal axis of the opening through the sleeve, whereupon the sleeve, handle, spring, and nut may be replaced upon the
 60 shank 2, thus arranging the parts as shown in Fig. 4.

It is obvious that in the operation of this improved wrench, when the handle is adjusted so as to project in opposite directions
 65 from the body of the wrench, the operator

may grasp the wrench with one hand so that the fingers engage the under portions of the handle upon opposite sides of the body of the wrench, to rotate the sleeve or to move the same longitudinally, and the
 70 palm of the hand comes into engagement with the rotary cap 16 to apply pressure longitudinally of the wrench to reciprocate the sleeve 6, or to apply pressure longitudinally of the shank 2 to force a tap, or other
 75 tool or device, held by the wrench, into engagement with any object which is being operated upon. When the handle is adjusted so as to extend only in one direction from the body of the wrench, as shown in Fig. 4,
 80 the operator may grasp the under surface of the handle with the fingers of one hand and apply pressure to the rotary cap 16 with the thumb of the same hand to manipulate the wrench as may be desired. 85

Although only a single form has been shown in which this invention may be embodied, the invention is not limited to any specific construction but might be applied in various forms or devices without departing from the spirit of the invention or the scope of the appended claims. 90

Having thus fully described this invention, I claim and desire to protect by Letters Patent of the United States:— 95

1. A device of the class described including a spindle, a sleeve surrounding said spindle and movable longitudinally thereon, a disengageable clutch between said sleeve and said spindle, a spring for normally holding said clutch in locked engagement, said sleeve having a transverse opening therethrough and a handle located through said opening and provided with a plurality of transverse holes, through any of which
 100 said spindle may extend to fix the handle to said sleeve in various adjusted positions, said handle adapted to be grasped by the fingers of the hand and said spindle adapted to have pressure applied thereto by another
 105 portion of the hand in each adjusted position of the handle.

2. A device of the class described including a spindle, a sleeve slidable over one end of said spindle and longitudinally movable
 115 thereon, a removable head on said spindle, a rotatable cap, a spring interposed between said head and said sleeve, a disengageable clutch between adjacent portions of said spindle and sleeve normally held in locked
 120 position by said spring, said sleeve having a transverse opening therethrough, and a handle fitted into said opening, said handle being provided with a plurality of transverse openings through any one of which
 125 said spindle may be passed to rigidly secure said handle in various adjusted positions, said handle capable of being grasped by the fingers of the operator and said rotatable cap adapted to be engaged by 130

another portion of the hand of the operator in each adjusted position of the handle for the purposes set forth.

5 3. A wrench comprising a spindle, a sleeve surrounding said spindle and longitudinally movable thereon, a removable head on said spindle, a spring interposed between said head and said sleeve, clutch teeth on coacting portions of said spindle and
10 said sleeve normally held in locked engagement by said spring, said sleeve having a transverse opening therethrough, and a han-

dle fitted into said opening with a sliding fit, said handle being provided with a plurality of transverse holes through any of 15 which said spindle may be passed to fixedly secure said handle to said sleeve.

In witness whereof I have hereunto set my hand this third day of November, A. D. 1913.

DANIEL J. NORMOYLE.

Witnesses:

A. I. GARDNER,
ALEXANDER PARK.

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