M. D. REIP.

WRENCH.

APPLICATION FILED MAR. 31, 1914.

1,121,760. Patented Dec. 22, 1914.

Fig. 1.

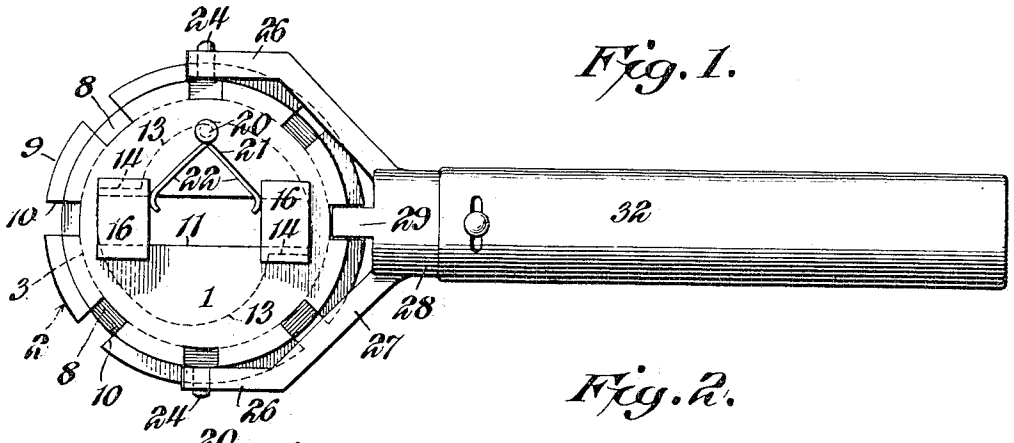


Fig. 2.

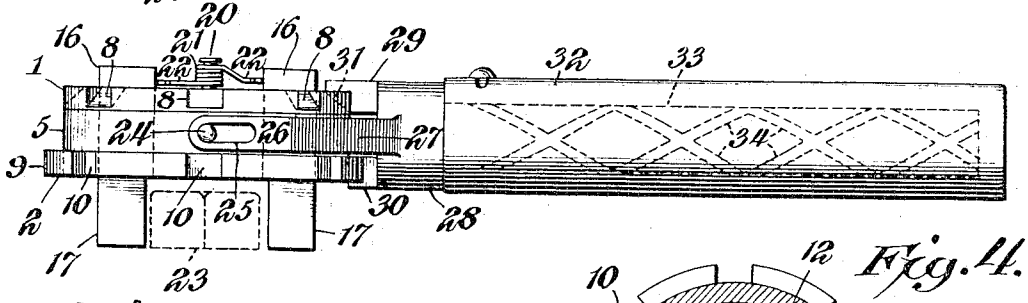


Fig. 3.

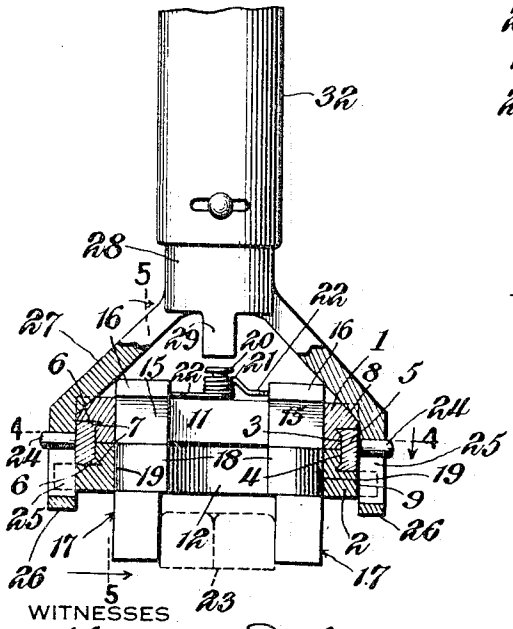


Fig. 4.

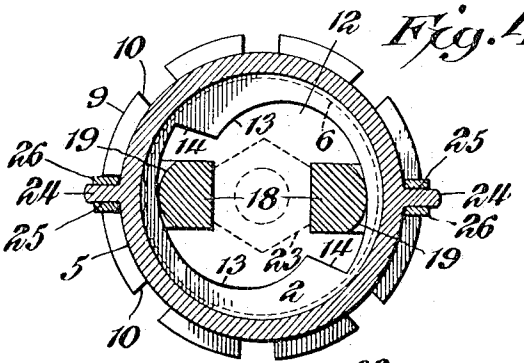
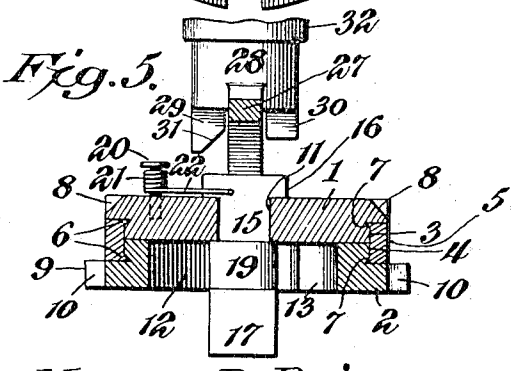


Fig. 5.



WITNESSES

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WRENCH.

1,121,760. Specification of Letters Patent. Patented Dec. 22, 1914.

Application filed March 31, 1914. Serial No. 828,612.

To all whom it may concern:

Be it known that I, MORGAN D. REIP, a citizen of the United States, residing at Lothair, in the county of Hill and State of Montana, have invented a new and useful Wrench, of which the following is a specification.

This invention has reference to improvements in wrenches, and its object is to provide a quick adjustable wrench by means of which a nut may be continuously rotated without removing the jaws therefrom to set it up tight or release it, and the nut may be rapidly applied to or removed from a threaded stem or bolt. Also, the wrench can be used for other purposes, such as turning drills, screw-driver bits, etc., rapidly.

In accordance with the present invention the wrench comprises two rotatable members secured together to move about a common axis and both of these members have their margins notched so that the notches may be brought into coincidence. One of the members carries jaws movable toward and from each other by engagement therewith of the other member, and the connecting means for the two members carries a handle movable about diametrically arranged trunnions into and out of the notches and the handle member is moreover provided with a quick acting screw portion whereby through a longitudinal movement of the handle the nut gripping portions may be rapidly rotated in one direction or the other, as desired, to screw the nut upon a threaded stem or to unscrew it therefrom.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of this specification with the further understanding that while the drawings show a practical form of the invention, the latter is not confined to any strict conformity with the showing of the drawings but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention.

In the drawings: Figure 1 is a plan view of a wrench constructed in accordance with the present invention. Fig. 2 is a side elevation thereof. Fig. 3 is a diametric cross-section with some parts in elevation, showing the position assumed for threading a nut on to or removing it from a threaded stem. Fig. 4 is a section on the line 4—4 of Fig. 3. Fig. 5 is a section on the line 5—5 of Fig. 3.

Referring to the drawings there are shown two circular plates 1, 2, respectively, each formed with a circumferential rabbet 3, 4, respectively, and these rabbets are in matching relation, receiving a ring 5 in encircling relation to the meeting marginal portions of the plates 1 and 2. This ring is formed with inner circumferential lips 6 seating in grooves 7 at the angles of the rabbets to hold the two plates 1 and 2 together, and yet permit either to turn independently of the other.

The plate 1 has at its periphery a circular series of inclined notches or recesses 8, while the plate 2 has at its peripheral portion an outstanding radial flange 9 formed with a circular series of notches or recesses 10 spaced apart the same as the notches 8. The notches 10 are of the same depth through their axial length and are preferably of the same width as the inclined notches 8.

The plate 1 is formed with a diametric slot 11 through it with the ends terminating at a short distance from the margins of the plate, while the plate 2 has a central opening 12 therethrough of a diameter in one direction substantially that of the length of the slot 11, and the walls of this opening on opposite sides of the center of the plate form volutes 13 each at the inner end terminating in a shoulder 14 extending outwardly to the outer end of the other volute wall.

Lodged in the slot 11 are necks 15 terminating in laterally expanded heads 16 and each formed on one end of a jaw 17 separated from the neck by a block 18 of such length as to be lodged within the opening 12 and each block 18 has a rounded face 19 positioned to be engaged by the corresponding volute wall 13 of the opening 12. Each block 18 is in part rectangular in cross-section so as to lodge in and move along the slot 11 without turning on the longitudinal axis of the jaw, while the necks 15 and heads 16 of the blocks hold them to the plate 1. A pin 20 on the plate 1 carries a spring 21 having legs 22 projecting in opposite directions and engaging the respective heads 16 of the jaws, the normal action of the spring being to maintain the jaws at the respective

outer extremities of the slot 11, but yieldable to forces tending to move the jaws toward each other.

Assuming that the jaws are at the outer limits of their travel away from each other, the plate 2 is then so related to the plate 1 that the outer ends of the volute walls 13 engage the rounded portions 19 of the block parts of the jaws 17. Now if the plate 2 be turned on the plate 1 about the common axis of the two plates, the volute walls 13 approach and so force the jaws 17 toward each other until arrested by some object such as a nut 23 indicated in dotted lines in Figs. 2, 3 and 4, the spring 21 yielding to this movement, but forcing the jaws apart on a reversal of the movement of the plate 2.

The connecting ring 5 is provided on diametrically opposite sides with outstanding pins or trunnions 24 extending through elongated slots 25 in ends 26 of the legs 27 of a yoke, the ends 26 being substantially parallel one with the other, and the remainder of the legs 27 slanting toward a block 28 from which they extend. The block 28 has teeth 29, 30, respectively, on opposite sides of the legs 27, the tooth 29 being somewhat longer than the tooth 30 and having an inner beveled portion 31. The legs 27 may be turned about the trunnions 24 as an axis to bring these legs on substantially the same level or in substantially the same plane as the ring 5 or they may be turned so as to be at substantially right angles to the plane of the ring 5. When the legs 27 are in the same plane as the ring 5 the terminal portions 26 of the legs 27 may lie upon the flange 9 with the tooth 30 engaged in a recess 10 and the beveled portion 31 of the tooth 29 engaged in a bevel recess 8, thus locking the plates 1 and 2 together and any movement of the legs 27 in a direction to rotate the ring 5 will cause a like movement of the plates 1 and 2. If the legs 27 be moved about the trunnions 24 to a position substantially at right angles with the plane of the ring 5 and the plates 1 and 2, and the legs 27 be permitted to approach the plates 1 and 2 because of the presence of the slots 25, the parallel portions 26 of the legs 27 enter into diametrically opposite recesses 10, while the approaching portions of the legs 27 enter into the beveled notches 8, thus again locking the plates 1 and 2 together.

The block 28 carries a handle 32 which in conjunction with the block 28 may constitute a quick acting rotatable member with an inner stem 33 provided with crossing grooves 34 indicated in dotted lines in Fig. 2, and having the same construction as the familiar automatic or spiral ratchet screw drivers and tool holders. For this reason no attempt is made to show the specific structure of the reciprocable handle which at the same time imparts rotative movement to the block 28 and legs 27, for the construction may follow any of the well known forms of such mechanism.

If it be assumed that the nut 23 is already upright, and it is desired to tighten it against the parts to be held, the jaws 17 are placed on opposite sides of the nut and the ring 2 is rotated sufficiently to bring the jaws against the nut by the action of the volute walls 13 of the blocks 18. Now the handle 32 which may have been sufficiently raised so that the legs 27 are out of the recesses 8, while the ends 26 of the legs were in the recesses 10 to cause the turning of the plate 2, is turned toward the position shown in Figs. 1 and 2. This brings the teeth 29 and 30 into respective notches 8 and 10, thus locking the plates 1 and 2 together. Force applied to the handle 32 causes a rotation of the plates 1 and 2 with the jaws 17 gripping the nut, so as to tighten the nut to the desired degree. Suppose, however, that it is desired to loosen the nut, the same procedure is carried out except that the force applied to the handle 32 is in the opposite direction, thus loosening the nut. If it be further desired to entirely remove the nut the handle is moved to the upright position, that is, at right angles to the plates 1 and 2 as shown in Fig. 3, and in alinement with the threaded stem upon which the nut is applied, and by imparting a reciprocatory movement to the movable member of the handle 32, rapid rotative movement is imparted to the jaws 17 in the proper direction, unscrewing the nut from the stem. A reversal of this movement causes a screwing of the nut upon the stem. The wrench is therefore capable of use in the ordinary manner of a wrench, and is furthermore capable of use for the rapid application to or removal of a nut from a threaded stem. The length of stem to which the nut may be applied or from which it may be removed will depend upon the length of the jaws 17 and by making the slot 11 wide enough to receive the threaded stem to which the nut is applied, the wrench may be utilized in connection with a stem, which when the nut is screwed tight will reach substantially to the block 28.

By rocking the handle on the trunnions 24 so as to move the teeth 29 and 30 into and out of the notches 8 and 10, the wrench may be used in the manner of a ratchet wrench after the jaws 17 have been brought into proper engagement with the nut, and such movements of the wrench in either direction may be accomplished without loosening the jaws from the nut 23 since the handle is carried by the trunnions on the connecting ring capable of moving in either direction with relation to the two plates without of necessity turning either plate so long as the legs 27 of the teeth carried by the handle do

not engage in the notches 8 or 10. This condition is present when the handle is at an intermediate position between the active position of Figs. 1 and 2 or the active position of Fig. 3.

What is claimed is:—

1. A wrench comprising two coacting members each movable about a common axis, jaws carried by one member and the other member having means for acting on the jaws to cause them to approach, and a handle member carried by the said two members and mounted thereon for movement about an axis perpendicular to the common axis of the first two members, said handle member and the first two members having coacting means for holding said first two members in immovable relation one to the other.

2. A wrench comprising two adjoining plates with a connecting ring holding them together and permitting the plates to turn one relative to the other about a common axis, jaws carried by one plate and the other plate having means for causing movements of the jaws toward each other and both plates being provided with marginal notches movable into coincidence, and a handle member pivotally mounted on the connecting ring at diametrically opposite points thereof and movable about the pivot connection, said handle member having terminal legs straddling the plates and movable into and out of matching notches thereon.

3. A wrench comprising two plates in face to face relation with a marginal connecting ring permitting the plates to move one relative to the other about a common axis, one of the plates having a transverse slot therein and the other plate having an opening with volute walls, jaws mounted in the slot of the first-named plate and having parts in the path of the volute portions of the second-named plate, both plates having marginal notches adapted to be brought into matching relation, and a handle member provided with divergent legs in straddling relation to the plates and pivotally connected to the ring on opposite sides thereof, said legs being adapted to matching notches of the two plates, and the handle having teeth also adapted to matching notches of the two plates.

4. A wrench comprising two plates in face to face relation with a marginal connecting ring permitting the plates to move one relative to the other about a common axis, one of the plates having a transverse slot therein, and the other plate having an opening with volute walls, jaws mounted in the slot of the first-named plate and having parts in the path of the volute portions of the second-named plate, both plates having marginal notches adapted to be brought into matching relation, and a handle member provided with divergent legs in straddling relation to the plates and pivotally connected to the ring on opposite sides thereof, said legs being adapted to matching notches of the two plates, and the handle having teeth also adapted to matching notches of the two plates, the legs where pivoted to the ring having longitudinal slots permitting lengthwise movements of the handle member with respect to the plates.

5. A wrench comprising two plates in face to face relation with a marginal retaining ring holding them in such relation and permitting the plates to be rotated one with respect to the other about a common axis, one of the plates having a diametric slot and marginal inclined notches, and the other plate being provided with a radially extended marginal flange with notches adapted to be brought into matching relation with the inclined notches of the first-named plate and also having an interior opening with volute walls, jaws mounted on the first-named plate in the diametric slot therein and having portions in operative relation to the volute walls of the second-named plate, and a handle member having divergent leg portions in straddling relation to the ring and provided with pivotal connections thereto at diametrically opposite points, the legs terminating in parallel parts having longitudinal slots for the pivotal connections, the divergent and parallel portions of the legs being adapted to the respective notches of the two plates when the handle is in the axis of rotation of the plates, and said handle having teeth on opposite sides of the legs with one tooth adapted to the notches in the flange of one plate and the other tooth having an inclined wall adapted to the inclined notches of the other plate, and the plate carrying the jaws being also provided with a spring tending to separate the jaws.

6. A wrench comprising two plates in face to face relation with a marginal retaining ring holding them in such relation and permitting the plates to be rotated one with respect to the other about a common axis, one of the plates having a diametric slot and marginal inclined notches, and the other plate being provided with a radially extended marginal flange with notches adapted to be brought into matching relation with the inclined notches of the first-named plate, and also having an interior opening with volute walls, jaws mounted on the first-named plate in the diametric slot therein and having portions in operative relation to the volute walls of the second-named plate, and a handle member having divergent leg portions in straddling relation to the ring and provided with pivotal connections thereto at diametrically opposite points, the legs terminating in parallel parts having longi-

tudinal slots for the pivotal connections, the divergent and parallel portions of the legs being adapted to the respective notches of the two plates when the handle is in the axis of rotation of the plates and said handle having teeth on opposite sides of the legs with one tooth adapted to the notches in the flange of one plate and the other tooth having an inclined wall adapted to the inclined notches of the other plate, and the plate carrying the jaws being also provided with a spring tending to separate the jaws, the handle having means for causing the rotation of the plates about their common axis by longitudinal movements of a part of said handle.

7. A wrench provided with jaws movable toward and from each other, and means for carrying said jaws and imparting said movements, and a handle member connected to the carrying means for the jaws and having a range of movement with respect to said carrying means to place the handle in different positions with relation to said carrying means, the handle having means for causing a rotation of the jaw carrying means on a longitudinal movement of a part of the handle, and both said handle and jaw carrying means having coacting parts for connecting the handle and jaw carrying means together for simultaneous movement.

8. A wrench comprising jaws, a carrying means for the jaws provided with means for causing the approach and recession of the jaws, and a handle member for rotating the jaws and carrier therefor, said handle being mounted on the jaw carrying means for movement from a position of coincidence with the axis of rotation to a position substantially perpendicular thereto, and both the handle and jaw carrying means having coacting parts for connecting the jaw carrying means and handle together in either of the named position for simultaneous movement.

9. A wrench comprising two plates connected together face to face and provided with marginal notches adapted to be brought into coincidence, one plate carrying jaws and the other plate having means for the actuation of said jaws one toward the other on the turning of the plate about an axis common to both plates, and a manipulating handle pivotally connected to the plates for rocking movement with respect thereto and having means for simultaneously engaging in matching notches of both plates.

10. A wrench comprising two plates connected together face to face and provided with marginal notches adapted to be brought into coincidence, one plate carrying jaws and the other plate having means for the actuation of said jaws one toward the other on the turning of the plate about an axis common to both plates, and a manipulating handle pivotally connected to the plates for rocking movement with respect thereto and having means for simultaneously engaging in matching notches of both plates when the manipulating handle is in substantially perpendicular relation to the common axis of the two plates and provided with other means for simultaneously engaging the matching notches of the two plates when the handle is in substantial coincidence with the common axis of rotation of the two plates.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

MORGAN DAVID REIP.

Witnesses:
C. F. BAKER,
C. H. ALLEN.