F. T. REESE.

RATCHET WRENCH.

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1,428,982. Patented Sept. 12, 1922.

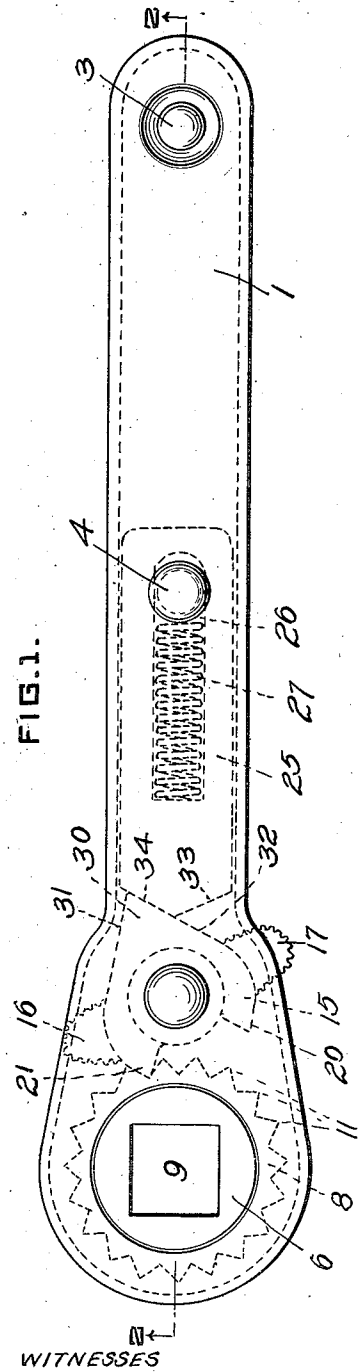


FIG. 1.

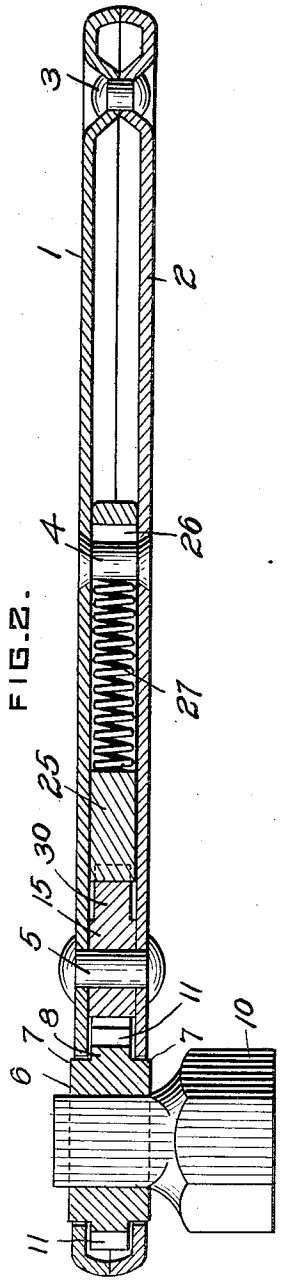


FIG. 2.

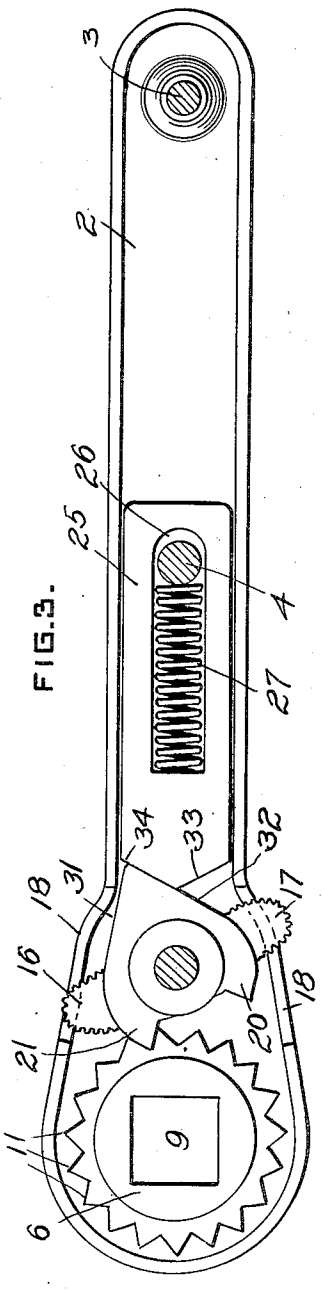


FIG. 3.

WITNESSES

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UNITED STATES PATENT OFFICE.

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RATCHET WRENCH.

Application filed January 22, 1921. Serial No. 439,111.

To all whom it may concern:

Be it known that I, FRANKLIN T. REESE, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Ratchet Wrenches, of which the following is a specification.

This invention relates to ratchet wrenches. More particularly the invention relates to the form and arrangement of the mechanism of such wrenches.

The object of the invention is to provide a wrench with a minimum number of parts, that can be manufactured cheaply, embodying all the reversible features of this class of wrench without sacrificing strength of the parts, and one wherein the reversing mechanism can be manipulated at will by the operator with the operating hand, without removing the hand from the wrench or the wrench from the nut or socket as the case may be,—thus the manipulator has the other hand free at all times to assist in the operation, regardless of the reversing mechanism. This wrench primarily consists of but three movable operating parts,—which are enclosed in a casing preferably made from pressed steel having annular slots provided in its sides extending lengthwise of the body of the wrench, through which suitable projections which are an integral part of the trigger, extend sufficiently to permit of its manual manipulation by the thumb or forefinger of the operating hand.

Referring to the drawings Fig. 1 shows a plan view of the wrench, with the interior parts indicated in dotted lines; Fig. 2 is a central vertical longitudinal section on the line 2—2 of Fig. 1; Fig. 3 is a plan view of the wrench corresponding to Fig. 1 with the top cover plate removed; Figs. 4 and 5 are views similar to that of Fig. 1 of modifications.

Wrenches have heretofore been provided, in which a rotatable member was mounted in the end of a handle, said rotatable member having a hole therethrough of non-circular shape, adapted to engage a nut, or other object to be turned in one direction. Ratchet arrangements have been provided which might be thrown from one side to the other, in order to cause the rotatable member to turn freely in one direction, and to be locked to the handle with respect to rotation in the other direction. But these wrenches have embodied a comparatively large number of parts and have required two hands of the operator to throw them from one direction to the other.

The present invention particularly relates to the form of the trigger in its relative actuating movement at point of contact with the spring pressed plunger—adapted to return the trigger to place engaging the projections of same, with the teeth of the rotatable ratchet, when the handle is moved around the axis of the ratchet member, and to the form of the spring pressed plunger adapted to control it.

A preferred embodiment of a wrench comprising this invention is shown in Figs. 1, 2 and 3, wherein the handle of the wrench is made up of two halves 1 and 2, stamped from sheet steel. These members have inturned edges or flanges which when placed in contact as shown in Fig. 2 form a casing which houses all of the moving parts of the device. The two casing members 1 and 2 are fastened together by a rivet 3 which extends through holes in the middle portion of the casing members at the small end thereof, which end is adapted to form a handle. A second rivet 4 likewise extends through the casing members at another point, so as to hold them rigidly connected. A third rivet 5 extends through the casing members near the other end thereof. This end is enlarged to form a housing for a rotatable member 6, which is mounted therein. This member 6 has raised circular bearing portions 7 on each side with an enlarged intermediate portion 8, which normally lies between the walls of the casing. Thus the enlarged portions 7 are engaged by circular openings through the casing which fit loosely about these enlarged portions, and which lap over the enlarged part 8 lying between the walls. A non-circular opening 9 is provided in the middle portion of the member 6, for the purpose of egaging a nut, or other article to be turned such as the socket 10, illustrated in Fig. 2.

The periphery of the enlarged portion 8

of the rotatable member 6 is divided into serrations or teeth 11. A trigger, or pawl member 15 is rotatably mounted upon the rivet 5. This pawl member has two wings or extensions 16 and 17 extending laterally to the side wall of the casing member. The side walls of the members 1 and 2 are cut away to form openings 18 through which the wings 16 and 17 extend. The outer edges of these wings or extensions are roughened so as to be easily engaged by the fingers of an operator. The pawl member has two beveled forwardly extending teeth 20 and 21 adapted to engage the serrations or teeth 11 of the rotatable member 6.

In the handle portion of the casing is mounted a slidable member 25. This member has a longitudinal slot 26, through which passes the rivet 4. A coil spring 27 is positioned in this slot, one end bearing upon the forward end of the slot, and the other end bearing against the rivet 4. The width of the member 26 is such that it is snugly slidable in the casing, to move freely backward and forward, but not laterally. The spring 27 is of such strength that this slidable member is normally pressed forward into engagement with a beveled rearward extension 30 of the pawl member 15. This extension has two faces 31 and 32, which meet at an acute angle. The forward end, or nose of the slidable member 25 is likewise divided into two beveled faces 33 and 34, one or the other of which is constantly in contact with one or the other of the faces 31 and 32 on the pawl member.

This arrangement insures that the pawl member is held either in the position shown in Fig. 1, in which the tooth 21 is in engagement with the teeth of the member 6 or else in the position in which the tooth 20 is so engaged.

As will be readily understood by those familiar with the art, when the pawl is in the position shown in Fig. 1 and the wrench handle is turned to the left, with reference to the opening 9 as an axis, the handle will turn freely around the member 6, but the two will be locked together with respect to rotation in the opposite direction.

In Figs. 4 and 5 two modifications are shown. In Fig. 4 the pawl member 50 has a rearward beveled extension 51 controlled by plunger 52 having a stem 53 surrounded by coil spring 54, the end of the stem extending through an opening in a cross member 55. The head of the plunger is guided by two bearing members 56 and 57, mounted inside the casing, and attached thereto by screws 58. Instead of serrations on the ratchet member 6^a, lugs or extensions 59 are provided.

In Fig. 5 the plunger 60 is made hollow with a coil spring mounted therein. The rear end of the spring presses against a cross member 61, and the sides of the plunger are guided by bearing members 62 and 63, which are retained by screws 64. Instead of having serrations, the rotatable member 6^b has teeth 65, and the pawl member 66 is somewhat different in form from that of Fig. 4.

The two forms of wrench shown in Figs. 4 and 5 in reality are the development of the wrench shown in Figs. 1, 2 and 3, which have been an evolution of the forms shown in Figs. 4 and 5. The preferred form is much stronger, simpler, and more positive in action than the other forms, but they are all of the same general nature, and it is believed that they all embody the same inventive idea.

The many uses and advantages of this invention, its simplicity of construction, the positiveness of its action, its ease of manipulation, permitting an operator to shift it from one position to the other without removing it from the member being rotated, and without employing more than one hand at a time,—will be apparent to those familiar with the art.

I claim:

1. A ratchet wrench comprising a casing having a handle portion and a head portion formed of two similar sections provided with abutting lateral flanges to form a housing, a ratchet member trunnioned in the head portion, a rivet passing through the head portion for binding the sections together, a pawl cooperating with the ratchet pivoted on said rivet and having a nose projecting into the handle portion, a slidable plunger having an elongated recess mounted in the handle portion and bearing against the said nose, a second rivet binding the handle portion of the sections together and passing through one end of the recess, a coil spring having one extremity abutting the last named rivet and its opposite extremity bearing against the end of the recess for urging the plunger into contact with the nose, said last named rivet serving as a limiting stop for the plunger, the cross-sectional dimension of the plunger corresponding substantially to that of the handle portion whereby the casing not only houses but serves as a guide therefor.

2. A ratchet wrench comprising a casing having a handle portion and a head portion formed of two similar sections provided with abutting lateral flanges to form a housing, a ratchet member trunnioned in the head portion, a rivet passing through the head portion for binding the sections together, a pawl cooperating with the ratchet pivoted on said rivet and having a nose projecting into the handle portion, a slidable plunger having a recess mounted in the handle portion and bearing against the said nose, a second rivet binding the handle portions of

the sections together and passing through said recess, a coil spring having one extremity abutting the last named rivet and its opposite extremity bearing against the end of the recess for urging the plunger into contact with the nose, the cross sectional dimension of the plunger corresponding substantially to that of the handle portion whereby the casing not only houses but serves as a guide therefor.

In testimony whereof, I have hereunto set my hand.

FRANKLIN T. REESE.

Witness:
EDWIN O. JOHNS.