Jan. 30, 1951 W. H. MONTGOMERY 2,539,964

SLIDING JAW TYPE, RACK ADJUSTED WRENCH

Filed Sept. 14, 1945

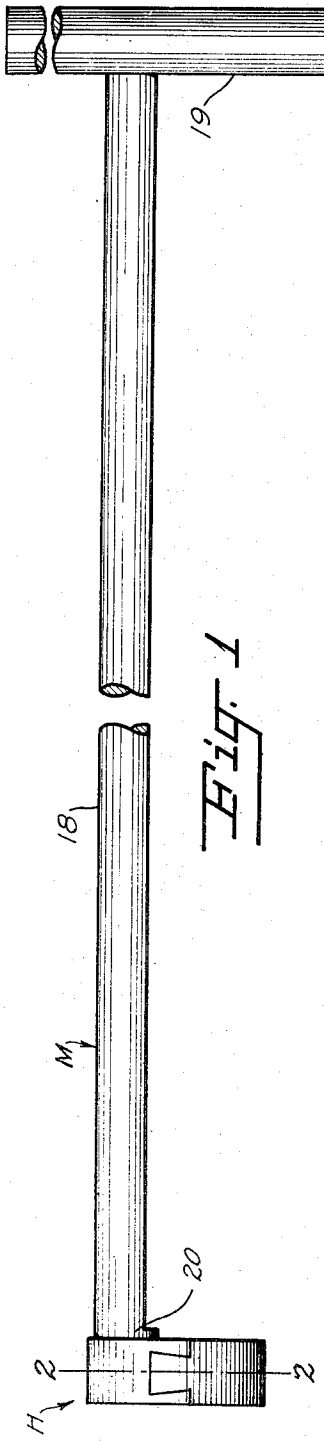


Fig. 1

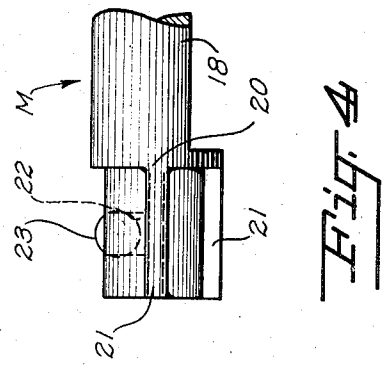


Fig. 4

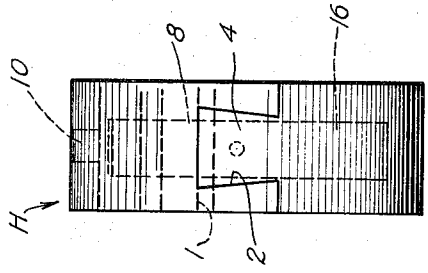


Fig. 3

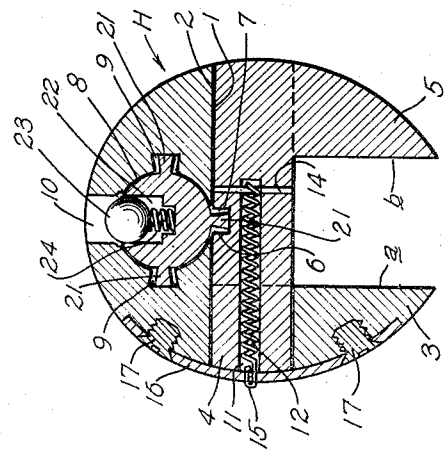


Fig. 2

INVENTOR.
W. H. Montgomery
BY
Wilfred C. Lawson
Attorney

Patented Jan. 30, 1951 2,539,964

UNITED STATES PATENT OFFICE

2,539,964

SLIDING JAW TYPE RACK ADJUSTED WRENCH

William H. Montgomery, Roswell, N. Mex.

Application September 14, 1945, Serial No. 616,243

4 Claims. (Cl. 81—129)

1

This invention relates to wrenches and it is a particular object of the invention to provide a device of this kind comprising two relatively movable jaws, together with a separable operating handle which can be operatively engaged with the wrench from either side thereof, whereby the movable jaw can be moved in a desired direction with respect to the stationary jaw.

Furthermore, it is an object of the invention to provide a wrench so constructed and operated primarily for use in the installing and removing of generators and starters from airplane engines or in connection with other work to which it is difficult to have access with the type of wrenches now generally in use.

A still further object of the invention is to provide a wrench of this kind of a type including a head provided with a fixed jaw and a sliding jaw mounted on the head for coaction with the fixed jaw and wherein means are provided for automatically urging the sliding jaw toward the fixed jaw to normally maintain said jaws in substantially a predetermined spaced relation as determined by the average size of the nut or other work with which the wrench is to be employed.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved wrench whereby certain important advantages are attained, as will be hereinafter more fully set forth.

In order that my invention may be better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view in top plan of a wrench and operating handle therefor constructed in accordance with an embodiment of the invention;

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1;

Figure 3 is an enlarged side elevational view of the head as herein embodied viewed from the side opposite to that in Figure 1; and

Figure 4 is a fragmentary view in elevation of the operating end portion of the operating member.

As disclosed in the accompanying drawings, the improved wrench comprises a head H, herein disclosed as substantially half oval in form and which is provided with a straight edge face 1 having entirely therealong a dovetail groove or channel 2 open at opposite ends.

Integrally formed with the head H at one end portion of the straight edge face 1 is an outstanding fixed jaw 3 which bridges the adjacent portion of the groove or channel 2 and has its inner or working face *a* herein disclosed at substantially right angles to the straight edge face 1.

Snugly fitting within the groove or channel 2

2

is a slide bar 4 formed at its outer end portion with an outstanding jaw 5 disposed in the same general direction as the jaw 3 and having its inner working face *b* substantially parallel with the working face *a* of the jaw 3.

The under surface of this slide bar 4 at approximately its longitudinal center is provided thereacross with a groove or channel 6 which normally registers with an intermediate or central groove or channel 7 formed in the wall of a relatively large circular opening 8 disposed through the head H below the groove or channel 2 and with which the groove or channel 7 communicates.

This groove or channel 7 is midway of two additional and radially opposed grooves or channels 9 formed in the wall of the opening 8 and which grooves or channels 9 are in opposed relation and in a plane substantially parallel to the longitudinal axis of the groove or channel 2 in the straight edge face 1 of the head H. These grooves or channels 7 and 9 are of dovetail formation and the head H diametrically opposed to the groove or channel 7 is provided with a slotted opening 10 in communication with the opening 8.

Provided in the inserted end, or the end of the slide bar 4 remote from the head 5 thereof, is a relatively deep socket or bore 11 in which is inserted a retractile member 12, herein disclosed as a coil spring, and which has its inner or inserted end portion anchored to the slide bar 4 by a pin 14.

The outer end portion of this retractile member or spring 12 is anchored, as at 15, to the intermediate portion of an elongated anchor plate 16 bridging the open end of the channel or groove 2 immediately adjacent to the jaw 3 and said plate 16 is held in position by the screws 17 or otherwise as may be preferred.

The tension of this retractile member or spring 12 is such as to normally maintain the intermediate groove or channel 7 in register with the groove or channel 6 of the slide bar 4.

The operating member M for the wrench, comprises an elongated handle bar 18 provided at one end with a cross operating handle 19. The opposite end portion of the bar 18, for a part of its length is of circular cross section, as at 20, to be substantially snugly received within the opening 8 of the head H.

This portion 20 has extending therealong and outwardly and radially therefrom the splines 21 so positioned and spaced as to extend within the grooves or channels 7 and 9 of the head H and the central or intermediate spline 21, as the portion 20 is inserted in the opening 8, enters the groove or channel 6 of the slide bar 4 whereby, upon turning of the operating member M, the jaw 5 carried by the slide bar 4 will have corresponding movement relative to the fixed jaw 3,

It is to be pointed out that the operating member M can be operatively engaged with the head H from either side as may be determined by the direction of turn of the member M desired to effect the closing action of the jaws 3 and 5 upon the nut or other work and the direction desired to turn the nut.

It will be noted that the grooves or channels 7 and 9 are of materially greater width than the width of the splines 21 which they receive, so that the operating member M is permitted to have sufficient rotation relative to the head H to effect desired opening and closing movement of the jaws 3 and 5 to facilitate the application of the head to and the gripping of the work by the jaws.

Diametrically opposed to the central or intermediate spline 21, the portion 20 of the member M is provided with a radially disposed pocket 22 in which is placed a spherical dog or pawl 23 which is yieldingly held partially projected beyond the pocket 22 by an expansible member 24, herein disclosed as a coil spring. The mouth of the pocket 22 is suitably reduced to limit the extent of normal projection of the dog or pawl 23.

As the portion 20 of the member M is inserted in the opening 8 from either side of the head H, the dog or pawl 23 will move inwardly until the same reaches the opening 10, whereupon the member or spring 24 will project said dog or pawl 23 into said slotted opening 10 and thus maintain the head H against accidental disengagement from the end portion 20 of the bar. The ball pawl 23 engages in the opening 10 to a sufficient extent to hold the head on the bar, but may readily slip out or be depressed into the pocket 22 to permit the desired turning of the end portion 20 in the head opening 8.

While the tool as herein comprised is primarily intended for use in connection with the installing and removing of generators and starters from airplane engines, it is, of course, to be understood that its use is not to be limited in this respect.

From the foregoing description it is thought to be obvious that a wrench constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated.

I claim:

1. A wrench comprising a head having opposite flat faces, a portion of the margin of the head being straight, a fixed jaw forming an integral part of the head at one end of the straight marginal portion and having a gripping face perpendicular to said straight marginal portion, the jaw having a straight passage therethrough one wall of which forms a continuation of the said straight marginal portion, said straight marginal portion having a longitudinal groove leading to said passage, the head having a circular opening therethrough in a direction substantially at right angles to the groove and to the planes of said faces, the wall of the opening having a longitudinal channel opening into the groove, a slide bar disposed against said marginal portion and having a longitudinally extending part slidably engaged in said groove, an end of the bar extending into said passage, a jaw forming an integral part of the other end of the bar for coaction with the fixed jaw, said bar having a groove transversely of a face thereof for registry with the channel in the wall of the head opening, yieldable means normally urging the slide bar in a direction to close the jaws and to a predetermined position with the groove of the bar in register with said channel, a relatively straight operating bar having a circular end portion insertable axially of the bar in the circular opening of the head from either side of the head, and a spline carried by and extending longitudinally of the said portion of the operating bar to engage within the registering groove and channel, the channel being of a width materially greater than the thickness of the spline to permit limited rotational movement of said circular end portion of the operating bar to effect limited movement of the slide bar and jaw carried thereby against the tension of said yieldable means.

2. A wrench of the character stated in claim 1, in which said yieldable means comprises a contractile spring, the slide bar having a bore longitudinally therein from and opening through the end remote from the jaw carried thereby, said spring being disposed in the bore and secured at one end to the bar, and means carried by the head at the end of the slide bar adjacent to the fixed jaw for securing the other end of the spring.

3. A wrench of the character stated in claim 1, wherein additional channels are formed in and longitudinally of the wall of said circular opening, and additional splines carried by and extending longitudinally of the said circular end portion of the operating bar and each engaging in one of said additional channels, the said additional channels being of a materially greater width than the width of the splines to permit the stated limited rotational movement of the circular end portion of the operating bar.

4. A wrench of the character stated in claim 1, in which the said yieldable means comprises a contractile spring, the slide bar having a bore formed longitudinally therein from and opening through the end thereof remote from the jaw which forms a part of the slide bar, said spring being positioned in said bore and secured at one end to the slide bar, a plate member detachably secured to the margin of the head adjacent to and overlying the outer end of the said passage, the other end of said spring being attached to the plate member and the plate member functioning to limit the sliding movement of the bar member under the action of the spring.

WILLIAM H. MONTGOMERY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
874,269	Webb et al.	Dec. 17, 1907
1,660,208	Preining	Feb. 21, 1928
1,721,860	Krogel	July 23, 1929
1,771,172	Fraser	July 22, 1930

FOREIGN PATENTS

Number	Country	Date
431,061	Germany	July 1, 1926