March 8, 1949. R. E. DEMING 2,463,525

WRENCH FOR CYLINDRICAL HEADED OBJECTS

Filed March 12, 1946

FIG. 1

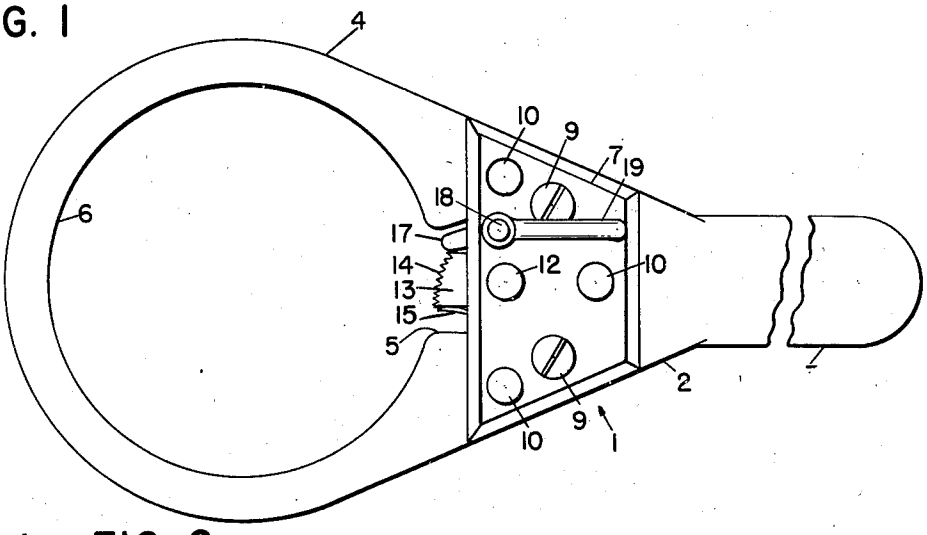


FIG. 2

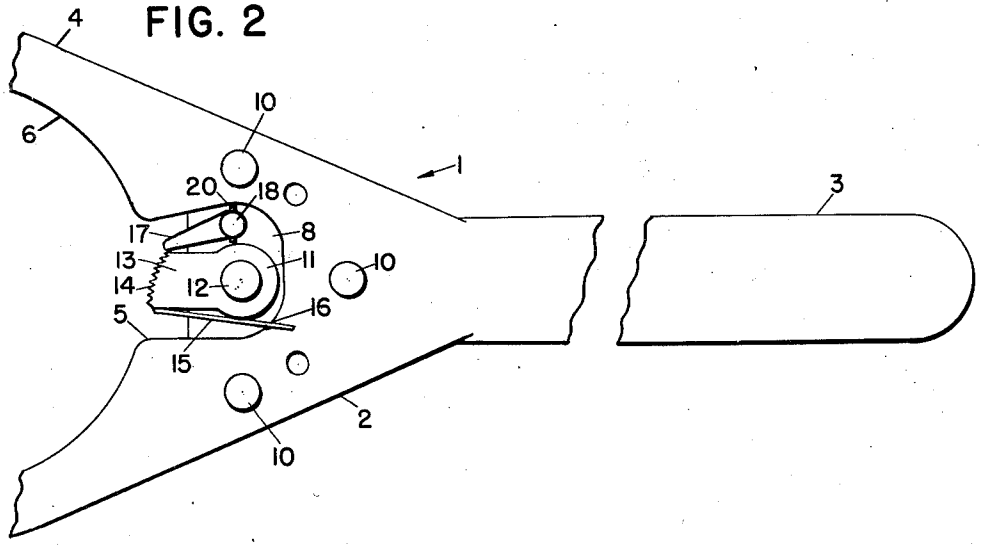
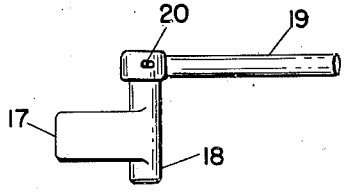


FIG. 3



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WRENCH FOR CYLINDRICAL HEADED OBJECTS

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1 Claim. (Cl. 81—97)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

1

This invention relates to wrenches and more particularly to wrenches of the strap type.

An object of the invention is to provide an improved wrench of such construction as to facilitate the installation and removal of cylindrical articles lacking adequate wrench faces.

Other objects of the invention are to provide an improved wrench of the strap type adapted to snugly engage a screw-threaded article to be installed or removed and having means for engaging the article to prevent relative rotation of the wrench; to provide an improved wrench device, of the character described, having retractable means for gripping the article so as to permit installation and removal of said article without marring or otherwise damaging the same; and to provide improved elements and arrangements thereof in a wrench of the character described and for the purposes set forth.

In accomplishing these and other objects of the present invention, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawing, wherein:

Fig. 1 is a plan view of a wrench embodying the features of the present invention.

Fig. 2 is a plan view of a portion of the wrench with one of the retaining plates removed.

Fig. 3 is a side elevational view of the dog and lever for releasing the wrench.

Referring more in detail to the drawing:

In Fig. 1, the numeral 1 designates a wrench of the strap type having a body 2 which includes an elongated handle 3 and a jaw portion or ring 4. The latter is preferably of substantially annular shape and has a portion thereof merging with and forming a part of the body 2. An enlarged recess 5 is formed in the latter portion of the body and ring so as to open into the circular bore 6 of said ring. For reinforcing the body, a pair of retaining plates 7 and 8 are secured in overlying and underlying relation thereto by means of suitable screws 9 and 10 so as to enclose a portion of the recess 5.

The wrench 1 is adapted to be employed in installing and removing cylindrical articles lacking adequate wrench faces of such character as to permit the use of conventional wrenches. In order to lock the article (not shown) within the bore 6 of the ring, gripping means in the form of a cam or pawl 11 is mounted in the recess 5, as is most clearly shown in Fig. 2. The cam 11 is journalled on a pivot pin 12 which extends through and is supported by the retaining plates. The cam includes a radial arm 13 which extends

2

toward the ring bore and has its outer end serrated to provide a plurality of transverse serrations or teeth 14. It is preferable for the serrated end of the arm 12 to be curved on an arc eccentric to the axis of the pivot pin 12, whereby the counter-clockwise portion of said arm is of increased length and projects into the ring bore.

A flat or leaf spring 15 engages the counter-clockwise surface of the cam arm 13 for urging the same in a clockwise direction and is preferably anchored within a suitable opening or slot 16 formed in the bottom of the recess 5 (Fig. 2). The cam arm is normally maintained in alignment with the longitudinal axis of the handle 3 by the spring 15 so as to extend radially of the ring bore and counter-clockwise pivoting of said arm is resisted by the tension of said spring. In this position, the portion of the cam arm of increased length projects into the ring bore so as to grip the surface of the article to be installed or removed.

In order to release the gripping means, a dog 17 is disposed in the recess 5 adjacent to and clockwise of said gripping means. As shown most clearly in Fig. 3, the dog 17 includes a pintle 18 which is journalled in the retaining plates and has an actuating lever 19 suitably fastened to one of its ends, such as by a lock pin 20. By swinging the lever 19 manually in a counter-clockwise direction, the dog 17 is engaged with the adjacent surface of the cam arm 13 so as to pivot the same in the same direction against the tension of the spring 15 and thereby move the serrated end of said arm out of the ring bore in order to permit engagement or disconnection of the wrench from the article to be installed or removed.

Operation

The operation of a wrench constructed as described is as follows:

The gripping means or cam 11 is retracted by swinging the lever 19 in a counter-clockwise direction so as to engage the dog 17 with the adjacent surface of said cam and thereby pivot said cam in a similar or counter-clockwise direction (Fig. 1).

With the serrations or teeth 14 removed from the bore 6 of the ring or jaw portion 4, said ring may be readily engaged over the article to be removed or installed. Upon release of the lever, the spring 15 urges the cam in a clockwise direction so as to engage its teeth with the peripheral surface of the article.

Due to the curvature or arc of the arm end,

clockwise swinging of the entire wrench 1 causes the teeth to more firmly grip the article. This gripping engagement in conjunction with the tension of the spring prevents relative rotation between the wrench and article when the former is swung in a clockwise direction. When the wrench is turned counter-clockwise, the pressure of the cam 11 against the article is relieved by virtue of the eccentric curvature of the teeth 14; and the wrench slips on the article in ratchet fashion. In order to apply and remove the wrench from the article, the cam is retracted by actuating the lever in the same manner as described hereinbefore.

While I have shown but one embodiment of my invention, it is susceptible to modification without departing from the spirit of the invention. I do not wish, therefore, to be limited by the disclosures set forth, but only by the scope of the appended claim.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

I claim:

A wrench including a body consisting of an elongated handle and an annular ring on the end of the handle, said body having a recess within the external circumference of the ring communicating with the ring bore and extending from side to side of the body, retaining plates fastened to opposite sides of the body so as to

reinforce the same and overlie and underlie a portion of the recess, the edges of said plates being spaced from said ring bore, a serrated cam pivotally supported by the retaining plates within said recess and having its serrated portion projecting into said ring bore, a flat spring within the recess for biasing the cam in its projecting position, a dog pivotally supported in said recess adjacent said cam, and a lever having connection with the dog for pivoting the same into engagement with the cam so as to swing said cam away from the ring bore against the bias of said spring.

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