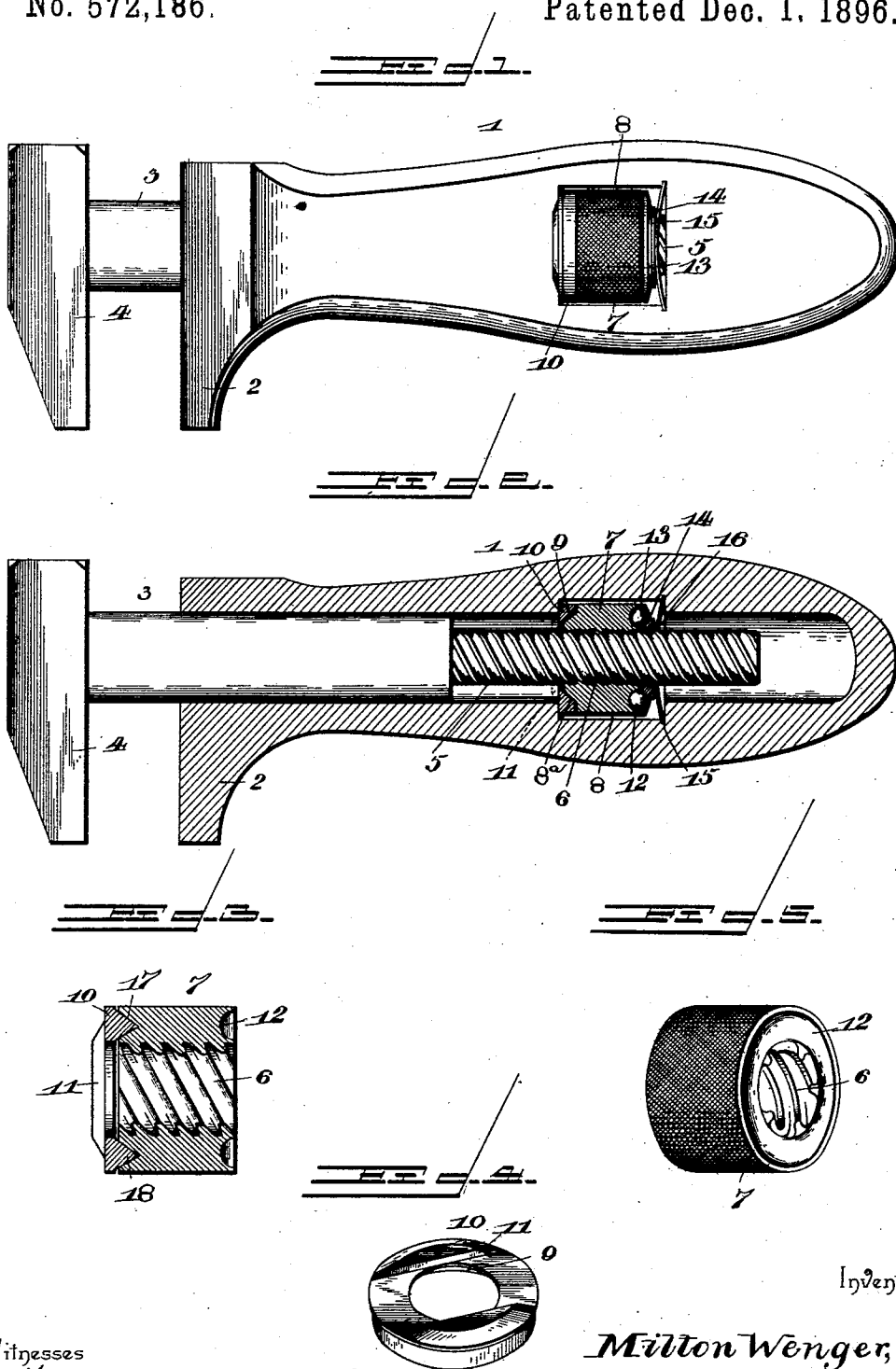


(No Model.)

M. WENGER.
WRENCH.

No. 572,186.

Patented Dec. 1, 1896.



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WRENCH.

SPECIFICATION forming part of Letters Patent No. 572,186, dated December 1, 1896.

Application filed April 30, 1895. Renewed July 10, 1896. Serial No. 598,732. (No model.)

To all whom it may concern:

Be it known that I, MILTON WENGER, a citizen of the United States, residing at New Holland, in the county of Lancaster and State of Pennsylvania, have invented a new and useful Wrench, of which the following is a specification.

This invention relates to wrenches, and particularly to that class of wrenches adjusted by means of nuts.

To this end the main and primary object of the present invention is to provide a nut-operating mechanism for all forms of nut-adjusted wrenches with screw-shanks, whereby the shanks of such wrenches can be adjusted very rapidly and accurately.

The invention also contemplates an operating mechanism of this character which admits of the ready and quick adjustment of the wrench with one hand and at the same time allows the wrench to be automatically closed without manipulating the nut.

In the attainment of these objects the invention also provides for reducing the frictional bearing of the nut to a minimum, so as to insure its free and easy rotation, and also to provide a positive clutch connection for the nut to insure the accurate adjustment of the wrench, and also to insure against the separation of the jaws of the wrench after the same has been adjusted on an object.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a side elevation of an ordinary form of wrench provided with the herein-described improvements. Fig. 2 is a central longitudinal sectional view of the same. Fig. 3 is a detail sectional view showing a modified construction of clutch connection for the adjusting-nut. Fig. 4 is a detail in perspective of the clutch-ring. Fig. 5 is a detail in perspective of the adjusting-nut.

Referring to the accompanying drawings, it will be seen that the form of wrench illustrated is a construction such as is commonly employed as a pocket-wrench, and said wrench

essentially consists of a hollow or tubular handle-shank 1, provided at one end with a fixed jaw 2 and accommodating for movement therein the sliding or movable shank 3, which is provided at its outer end with the movable jaw or head 4, opposed to the jaw 2 of the stationary shank 1. The movable shank 3 is provided for a portion of its length with a plurality of threads 5, having a much longer pitch than the usual screw, and the threads 5 of said movable shank 3 are adapted to be loosely engaged by the interior threads 6 of the adjusting-nut 7.

The interior threads 6 of the adjusting-nut 7 are of the same pitch as the threads of the movable shank in order to provide for a quick adjustment of the movable jaw and also to provide for the ready rotation of the nut by an inward movement of the movable shank, as will be more particularly referred to. The adjusting-nut 7 is preferably cylindrical in shape and is provided with a milled periphery to form a purchase for the fingers of the hand, and said adjusting-nut is mounted loosely in the transverse nut-opening 8, formed in the stationary handle-shank 1 intermediate of its ends.

The cylindrical adjusting-nut 7 is provided at one side with a reduced conical clutch-neck 8^a, that is adapted to register with the inner conical or beveled friction-surface 9 of the clutch-ring 10. The clutch-ring 10 is interposed between one side of the nut 7 and one side of the opening 8, in which the nut works, and on the side opposite its inner conical or beveled friction-surface 9 the said clutch-ring 10 is provided with a transverse recess or groove 11, that embraces one side of the nut-opening 8 and secures the ring 10 properly in position within such opening, and at the same time prevents the rotation of the ring.

In the side opposite the conical clutch-neck 8^a the nut 7 is provided with an annular bearing-groove 12, that receives a circular series of antifriction bearing-balls 13, that are held in position within the annular bearing-groove 12 by means of the dished bearing-plate 14, interposed between one side of the nut 7 and the side of the nut-opening 8 opposite the clutch-ring 10. The dished bearing-ring 14

is properly held in position, as well as the adjusting-nut and the clutch-ring therefor, by means of the bowed spring-plate 15, interposed between the ring 14 and one side of the nut-opening 8, and having an opening 16 therein to accommodate the threaded portion of the movable shank 3. It will therefore be seen that the spring 15 not only serves to secure the nut 7 within the nut-opening 8, but also serves to secure the ball or roller bearings of the nut properly in place and to hold said nut normally in frictional engagement with the clutch-ring 10, so as to hold the jaws of the wrench perfectly steady in their adjusted positions.

A slight modification of the wrench-operating mechanism herein described is observed, as shown in Fig. 3 of the drawings. In this figure of the drawings the nut 7 is illustrated as being provided at one side with an annular conical or V-shaped clutch-groove 17, that fits over and frictionally engages with an annular conical or V-shaped friction-rib 18, projected from the lower side of the clutch-ring 10, such construction being substantially equivalent to the construction illustrated in Fig. 2 of the drawings.

To operate the wrench, it is simply necessary for the operator to grasp the nut 7 and rotate the same in one direction to open the jaws, and by reason of the long pitch-threads of the movable shank the jaws will open very quickly. In thus turning the nut with the fingers the frictional connection between the nut and the clutch-ring 10 is sufficiently light to allow the nut to turn freely; but, however, when the jaws of the wrench have been adjusted on an object any tendency of the movable jaw to separate away from the fixed jaw necessarily draws or pulls the nut into tight frictional engagement with the clutch-ring 10, thereby positively preventing the nut from rotating and consequently preventing the jaws from separating. After the jaws of the wrench have been opened and slipped over an object it is simply necessary to push against the movable jaw to force the same inward. In pushing the movable jaw inward it will be obvious that the spring 15 yields so as to allow the frictional grip between the nut and clutch-ring 10 to loosen, and when the nut is thus relieved of its connection with the said clutch-ring the nut will freely rotate on its ball or roller bearings and thereby permit the closing of the wrench or the inward movement of the movable jaw without turning the nut with the fingers.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Reference may be made, in conclusion, to my concurrently-pending application, Serial No. 584,648, filed March 24, 1896, in which my present invention is broadly claimed.

Having thus described the invention, what

is claimed, and desired to be secured by Letters Patent, is—

1. In a wrench, a stationary shank provided with a nut-opening, the movable shank arranged to work through the nut-opening and provided with a plurality of threads of long pitch, an adjusting-nut mounted within the nut-opening and having a clutch connection with one side thereof, a ball-bearing for the side of the nut opposite its clutch connection, and a spring interposed between the ball-bearing and one side of said nut-opening, said spring holding the balls of said bearing in place and also normally adjusting the nut against the side of the nut-opening with which it has a clutch engagement, substantially as set forth.

2. In a wrench, a stationary shank provided with a nut-opening, the movable shank arranged to work through the nut-opening and provided with a plurality of threads of long pitch, an adjusting-nut mounted within the nut-opening and having a clutch connection with one side thereof, said nut being provided in the side opposite its clutch connection with an annular bearing-groove, a series of bearing-balls arranged in said groove, a dished bearing-plate arranged against said balls, and a spring interposed between said bearing-plate and one side of the nut-opening, substantially as set forth.

3. In a wrench, a stationary shank provided with a nut-opening, the movable shank arranged to work through the nut-opening and provided with a plurality of threads of long pitch, a clutch-ring fitted within the nut-opening at one side thereof, an adjusting-nut mounted within said nut-opening and having a frictional clutch connection with said clutch-ring, a ball-bearing for the side of the nut opposite its clutch connection, and a spring interposed between the ball-bearing and one side of said nut-opening, substantially as set forth.

4. In a wrench, a stationary shank provided with a nut-opening, the movable shank arranged to work through the nut-opening and provided with a plurality of threads of long pitch, a clutch-ring fitted within the nut-opening at one side thereof and provided with an inner conical or beveled friction-surface, an adjusting-nut mounted within the nut-opening and provided at one side with a conical clutch-neck registering with said friction-surface, and at the opposite side with an annular bearing-groove, a series of antifriction bearing-balls arranged in said bearing-groove, a dished bearing-plate arranged against said bearing-balls, and a spring interposed between said bearing-plate and one side of the nut-opening, substantially as set forth.

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

MILTON WENGER.

Witnesses:

E. L. SUTTON,
C. B. PLEAM.