(No Model.)

J. B. FORD.

WRENCH.

No. 591,528. Patented Oct. 12, 1897.

Fig. 1.

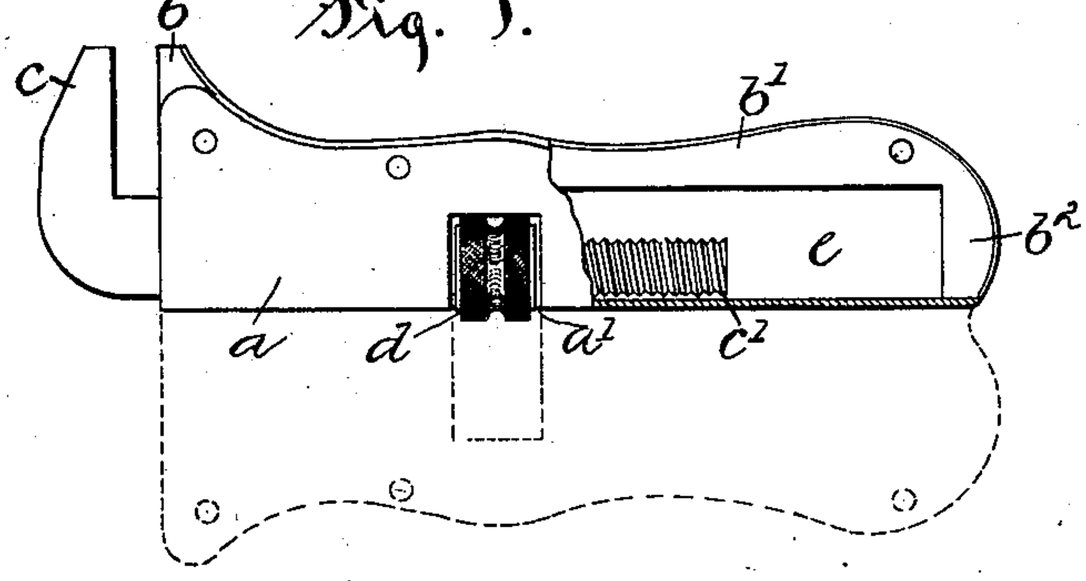


Fig. 2.

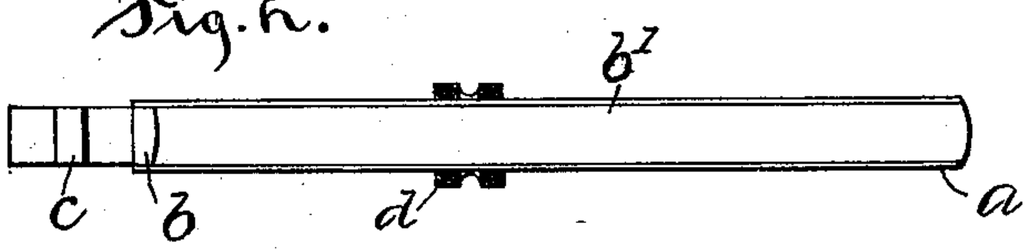


Fig. 3.

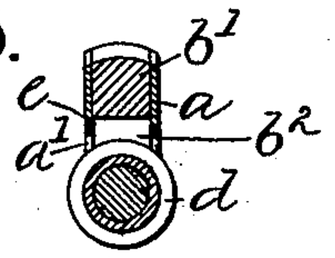
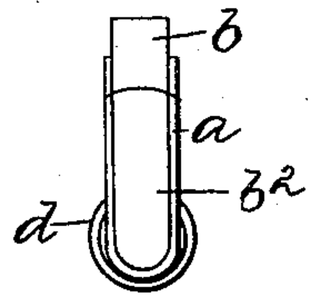


Fig. 4.



Witnesses.
Arthur P. Jenkins,
A. E. Hart

Inventor.
Jerome B. Ford.
by Chas. L. Burdett,
Attorney.

UNITED STATES PATENT OFFICE.

JEROME B. FORD, OF BRISTOL, CONNECTICUT.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 591,528, dated October 12, 1897.

Application filed January 6, 1896. Serial No. 574,412. (No model.)

To all whom it may concern:

Be it known that I, JEROME B. FORD, a citizen of the United States, and a resident of Bristol, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Wrenches, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of my invention is to provide a light, strong, and compact wrench of cheap construction and particularly adapted for use as a bicycle-wrench.

To this end my invention consists in the details of the several parts making up the invention as a whole and in the combination of such parts as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a side view of a bicycle-wrench embodying my improvement, a part being broken away to show the construction and another part extended in dotted outline. Fig. 2 is an edge view of the wrench. Fig. 3 is a view in cross-section through the wrench on a plane passing through the center of the nut. Fig. 4 is an end view of the wrench.

In the accompanying drawings the letter *a* denotes the handle portion of the wrench, the letter *b* a fixed jaw secured to and making up part of the handle-section, and the letter *c* deuotes the movable jaw of the wrench, which has a shank supported in a socket in the hollow handle-section of the wrench.

The handle-section is made up of a casing of sheet metal extending practically the whole length of the section and bent to U shape, the opening along one edge and the rear end of this casing being closed by the fixed jaw *b*, its shank *b'*, and the offset portion b^2. The sheet-metal casing is secured to the rigid filling-piece appurtenant to the jaw *b* by means of rivets, by brazing, or by other convenient means, the handle as a whole being of convenient shape to be grasped by the hands of a user.

The sheet-metal casing is formed by striking up from sheet metal, as by means of dies, a blank of the desired form, the rectangular opening *a'* being located centrally of the blank with reference to its width and at such point lengthwise of the blank as to locate the nut in convenient position for use. The blank is then bent to the U shape, as shown, the edges of the opening *a'* serving as abutments to take the thrust of the nut, by the rotation of which the movable jaw is operated.

The movable jaw has a threaded shank *c'* on its inner end located in the chamber *e* in the handle-section of the wrench and extending through the nut *d*. The nut *d* has the usual roughened or knurled surface, and it is of a diameter somewhat greater than the thickness of the handle-section of the wrench, so that the periphery of the nut projects beyond the handle a sufficient distance to enable the nut to be readily grasped and turned.

A feature of advantage of the construction of my improved wrench, as shown in the accompanying drawings, resides in so locating the nut in the opening of the shell as to permit the latter to project on both sides of the handle and also on the back, thus making the nut so accessible as to enable the jaws to be opened and closed by the thumb of the hand holding the wrench.

By the improved construction of the wrench in the several features described I am enabled to produce a tool combining the essential points of simplicity, durability, and cheapness of construction, by which an extremely light device is produced.

In the wrench as constructed the fixed-jaw section of the handle being a continuous piece of rigid metal extending along one side and across one end provides an extremely rigid support for the fixed jaw. The casing bent to U shape and secured to this jaw portion forms in a single piece three sides of the socket in the handle, and the location of the opening through this shell which permits the nut to project from the back side of the wrench completes with the nut and movable jaw a wrench having no superfluous metal or duplication of parts of the shell and with the working parts which must sustain the strain in the use of the wrench made solid with their immediate supporting parts, so as to best withstand the strain—that is, the fixed jaw *b* is integral with a substantial portion extending the full length of the handle-section and across the end, and it is supported along a greater portion of its surface than in structures where it projects through openings in

the thin opposite walls of a sheet-metal handle. This additional supporting-surface adds to the strength.

I claim as my invention—

1. In combination in a wrench, a handle-section comprising a fixed jaw with the shank and the offset portion, and a sheet-metal shell bent to U shape and secured to the fixed jaw and its appurtenant parts, a nut-socket formed through the side walls and back edge of the shell, a movable jaw having a threaded shank extending within the socket in the handle portion of the wrench, and a nut located in the socket on the threaded shank of the movable jaw and with its periphery extending beyond the side and back walls of the shell, all substantially as described.

2. In combination in a wrench, a sheet-metal casing bent to U shape, a nut-socket formed through the side walls and back edge of the shell, a jaw secured to the casing, a movable jaw having a shank extending within the casing, and a nut located in the socket on the threaded shank of the movable jaw, all substantially as described.

3. In combination in a wrench, a casing formed of sheet metal bent to U shape, a fixed jaw secured to the casing and having a shank closing the opening along the front end thereof, a nut-socket formed through the side walls and back edge of the shell, a movable jaw having a shank extending within the casing, and a nut located in the socket on the threaded shank of the movable jaw, all substantially as described.

4. In combination in a wrench, a casing struck from sheet metal bent to U shape, a fixed jaw having a shank less in width than the width of the casing and closing the front of the opening therein, an integral offset portion on the shank closing the end of the opening in the casing, a movable jaw having a shank extending within the casing, a nut-socket formed through the side walls and back edge of the shell, and a nut located in the socket on the threaded shank of the movable jaw, all substantially as described.

JEROME B. FORD.

Witnesses:
CHAS. L. BURDETT,
ARTHUR B. JENKINS.