L. S. STARRETT.

WRENCH.

No. 190,636. Patented May 8, 1877.

Fig. 1.

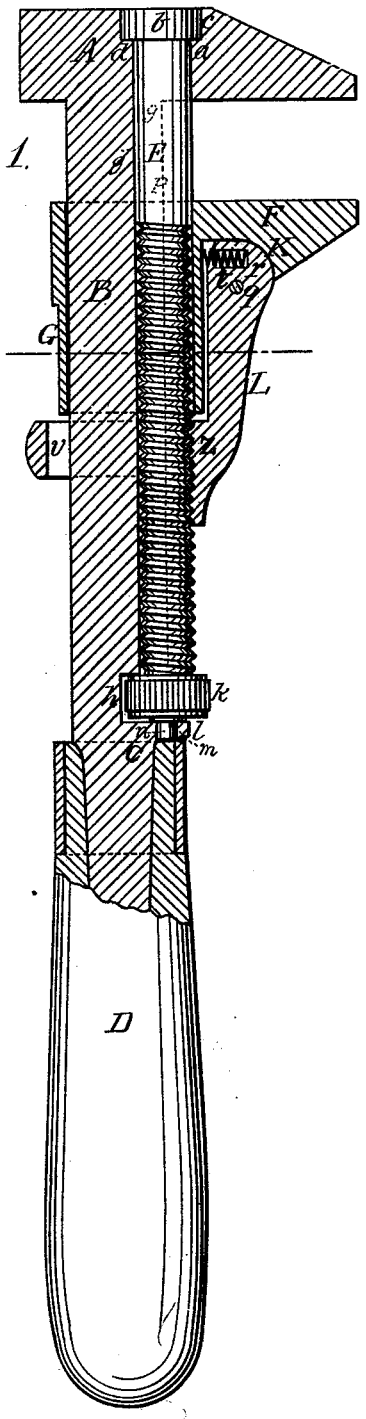


Fig. 2.

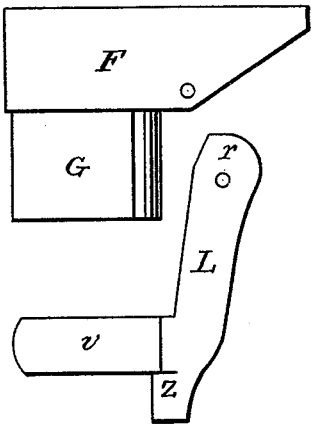
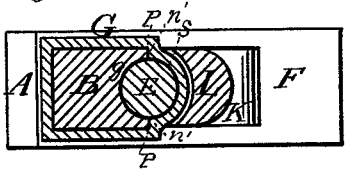


Fig. 3.



WITNESSES

M. P. Utley.

Villette Anderson.

INVENTOR

L. S. Starrett

by E. W. Anderson,

ATTORNEY

UNITED STATES PATENT OFFICE.

LAROY S. STARRETT, OF ATHOL, MASSACHUSETTS.

IMPROVEMENT IN WRENCHES.

Specification forming part of Letters Patent No. **190,636**, dated May 8, 1877; application filed December 9, 1876.

To all whom it may concern:

Be it known that I, LAROY S. STARRETT, of Athol, in the county of Worcester and State of Massachusetts, have invented a new and valuable Improvement in Wrenches; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal section of this invention. Fig. 2 is a detached view of the movable jaw and brace. Fig. 3 is a cross-section.

This invention has relation to wrenches; and it consists in the construction and novel arrangement, in connection with a rigid handle, and jaw-bar having a bearing-lip near the same; of the longitudinal working-screw, passing through the stationary jaw at one end, and bearing in said lip at the other; of the recessed sliding jaw and its swinging brace let into and pivoted to the same, and provided at one end with a spring, and at the other with a half-nut, engaging the face of the working-screw, all as hereinafter shown and described.

In the accompanying drawings, the letter A designates the end or stationary jaw of this wrench, from which extends a strong jaw-bar, B, which is provided with a tang, C, for insertion into the handle D, to which it is designed to be rigidly secured.

Through the jaw A an aperture, *a*, is made, which is circular in form, and serves as a bearing for one end of the working-screw E, the head *b* of which is received into an enlargement, *c*, of this aperture in the outer portion of the jaw, and bears against an internal circular ledge or shoulder, *d*, connecting the interior walls of the bearing *a* and its enlargement *c*. The axis of this aperture is usually in the plane of the face-edges of the jaw-bar, on each side of the groove *g*, which is formed longitudinally in its inner face. This groove, as usually made, is semi-cylindrical, its surface coinciding with that of one-half of the aperture *a*. At the other end of the groove is formed a transverse recess, *h*, for the reception of the inner portion of the milled collar *k* on the screw, said collar being of sufficient diameter to be easily operated. Beyond the collar projects a lip, *l*, which forms one of the walls of the recess *h*, and is provided with a bearing, *m*, for the journal *n* of the screw at this end.

In putting these parts together, the screw is slipped through the aperture *a* in the main jaw until its head engages with the shoulder *d*. At the same time its end is passed through the collar *k*, which is now secured, and its journal *n* is brought into engagement with the bearing-lip *l*. The screw now lies half within the groove *g*, and faces the jaw-bar on the inside, the edges *p* of the same being on opposite sides of said screw.

F designates the movable jaw, designed to slide on the jaw-bar and its face-screw, and provided with an extension or neck, G, which extends downward around the same a sufficient distance to brace the jaw to its work when set. In this jaw, on the under side, in front of the neck, a recess, K, is formed. This recess is usually rectangular in form, and provided with bearings for the journal-pin *q* of the head *r* of the brace. Through the jaw and its neck a rectangular opening or throat is formed, the same having a half-round depression or groove, *s*, within it in front, to fit over the screw, and on each side of the same longitudinal shoulders *n'*, to engage with the face-edges *n* of the jaw-bar.

L indicates the brace, whereof the head is pivoted in the recess K of the sliding jaw. Above the fulcrum it is provided with an aperture or seat for a spring, *t*. At its lower end is arranged a loop, *v*, which extends around the shank of the wrench, and a half-nut, *z*, which is designed to engage with the exposed portion of the screw, when brought up against the same. The loop *v* is large enough to allow the half-nut to be swung free or disengaged from the screw, when desired. Otherwise the half-nut will be kept to its engagement with the screw by the action of the spring above referred to.

When the half-nut is disengaged the movable jaw may be rapidly adjusted by sliding it along the bar. For the fine adjustment, the half-nut is brought into engagement with the screw, which is turned by means of its rose

or collar. In order to disengage the half-nut from the screw, pressure is exerted on the loop *v* or thumb-piece.

As the end of the brace, entering the movable jaw, abuts against the inside of the same, there is no strain on the rivet, and the position of the joint is such that the strain on the jaws produces an inward pressure or lock at the nut, so that although a V-thread is used, the nut cannot be forced from the screw.

The screw, inserted as above described, draws from the head, and adds to the strength of the bar between the jaws where the most strength is needed. It also excludes the possibility of backlash. The hole through the head of the wrench reduces the stock when it can be spared, and when the latter is malleable iron allows it to become thoroughly annealed and toughened.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a jaw-bar having a concave inner face in line with a shouldered aperture in the head of the same, and a bearing-lip at the handle end of said bar, of the working-screw, having a journal-head seated in said aperture flush with the surface of the wrench-head, a shank partly embedded in the concave inner face of the bar, a bearing in said lip, and a rose next the same, substantially as specified.

2. The combination, with a jaw-bar, recessed in its face, and a rigid perforated head, A, of a headed operating-screw, E, passing through the jaw-head A, and partly embedded in the face recess, a movable jaw, and pivoted thereto a swinging spring-brace, having a half-nut, *z*, engaging with the projecting portion of said screw, and a loop, *v*, surrounding the jaw-bar, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

LAROY S. STARRETT.

Witnesses:

LUCIUS B. SIMONDS,

LEANDER A. SMITH.