J. S. BIRCH.

Wrench.

No. 203,581. Patented May 14, 1878.

Fig: 1.

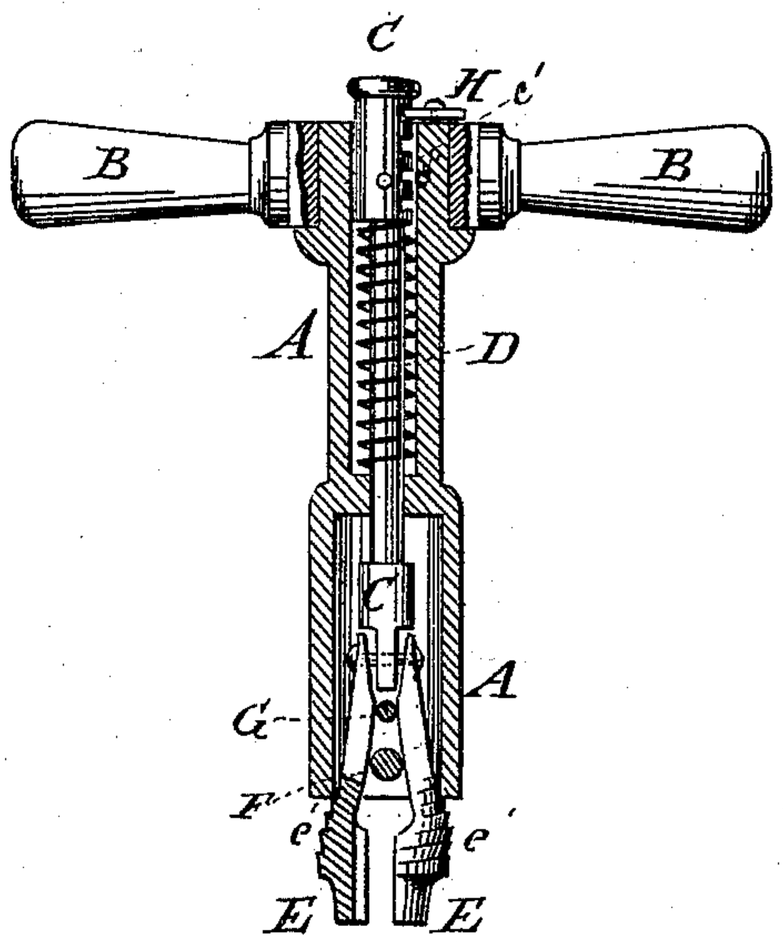


Fig: 2.

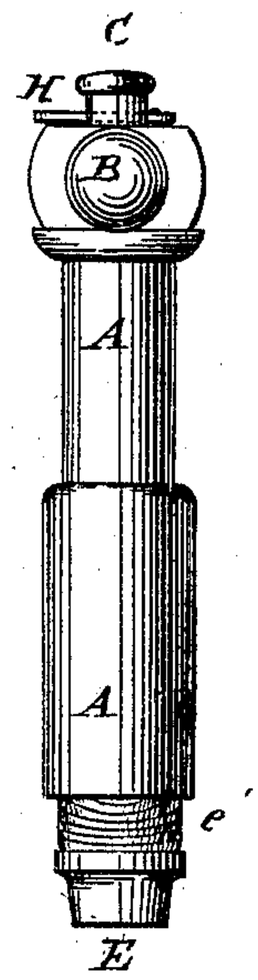
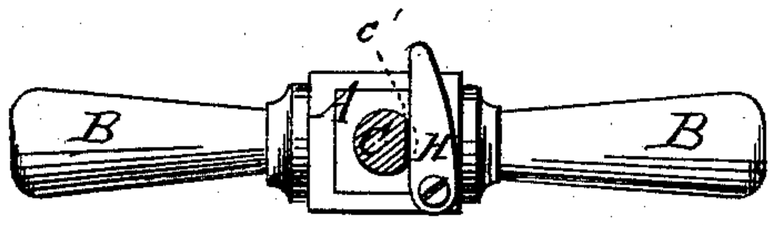


Fig: 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN S. BIRCH, OF ORANGE, NEW JERSEY.

IMPROVEMENT IN WRENCHES.

Specification forming part of Letters Patent No. **203,581**, dated May 14, 1878; application filed November 27, 1877.

To all whom it may concern:

Be it known that I, JOHN S. BIRCH, of Orange, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Wrenches, &c., of which the following is a specification:

Figure 1 is a longitudinal section of my improved tool. Fig. 2 is a side view of the same. Fig. 3 is a top view of the same, the stem being shown in section.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish a wrench, watch-key, or holding-tool which shall be so constructed as to adjust itself squarely to a nut, bolt, post, or other article to be held or turned, which will adjust itself to various-sized objects, and which, when adjusted to the desired size, may be locked in that position.

The invention consists in the jaws having the arched grooves or shoulders formed upon the rounded outer sides of their inclined middle parts to fit and rest upon the inner side of the edge of the barrel; in the combination of the small pin with the larger ordinary pin, with the jaws, the stem, and the barrel; and in the combination of a locking-catch with the stem and the barrel, the jaws, and the springs, as hereinafter fully described.

A is the hollow barrel of the tool, to the upper end of which is attached a cross-bar, B, to serve as a lever or handle in operating it. C is a stem, which is inserted in the cavity of the barrel A, and is held back by a spiral spring, D, the upper end of which rests against a shoulder on the stem C, and its lower end rests against a shoulder of the barrel B.

To the forward end of the stem C are hinged the inner ends of two jaws, E, by a cross-pin, flanges, or other suitable means, that will connect them securely to said stem, and at the same time permit them to have a movement toward and from each other.

The inner surfaces of the outer ends of the jaws E are straight, and have right-angled longitudinal grooves formed in them to receive the corners of the nut, bolt, stud, or other object to be turned or held.

The inner surfaces of the jaws E are slightly convexed longitudinally, and between them are placed two pins, F G, the ends of which pass through and are riveted or otherwise secured to the barrel A.

The outer or forward pin F is made much larger than the inner or rear pin G, so that the two pins may act as a triangular block to force the jaws E apart as they are projected, and keep their forward parts parallel with each other, or nearly so.

The outer surfaces of the middle parts of the jaws E are inclined inward, rounded off, and slightly flattened, so that the side parts of said outer surfaces may rest against the edge of the end of the barrel A, and prevent any rocking of said jaws when the tool is being used. The same thing may be accomplished by attaching inwardly-projecting pins to the barrel A, the inner ends of which enter longitudinal grooves in the outer surfaces of the said jaws E.

Upon the rounded outer surfaces of the jaws E are formed grooves or shoulders *e'*, which are arched, or so formed that as the said jaws are projected more and more, and are spread apart more and more, so as to come in contact with the edge of the barrel at different inclinations, each groove or shoulder may rest squarely upon the inner side of the said edge. The grooves or shoulders *e'* thus prevent the jaws from being drawn into or out of the barrel while being used.

If desired, the groove *e'* may be formed in the rounded inner surface of the jaws E, to engage with edges formed upon the sides of the larger pin F, to prevent the said jaws from slipping.

In the side of the stem C, at its outer end, are formed a number of transverse notches, *c'*, to receive a catch, H, pivoted to the end of the barrel A, or to the handle B, to lock the stem C and jaws E in position, when the said jaws have been adjusted to receive objects of a particular size, so that the tool will not require to be readjusted every time it is applied to one of said objects.

The catch H may be made of any desired form, the only essential thing being that it should lock the stem C in position in the barrel A when adjusted.

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

1. The jaws E, having the arched grooves or shoulders *e'* formed upon the rounded outer sides of their inclined middle parts to fit and rest upon the inner side of the edge of the barrel A, substantially as herein shown and described.

2. The combination of the small pin G with the larger ordinary pin F, with the jaws E, the stem C, and the barrel A, substantially as herein shown and described.

3. The combination of a locking-catch, H, with the stem C and the barrel A, the jaws E, and the spring D, substantially as herein shown and described.

JOHN S. BIRCH.

Witnesses:
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