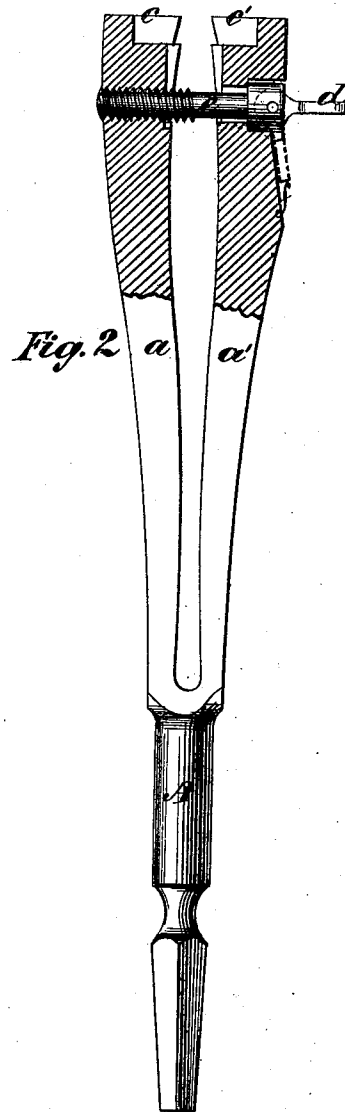
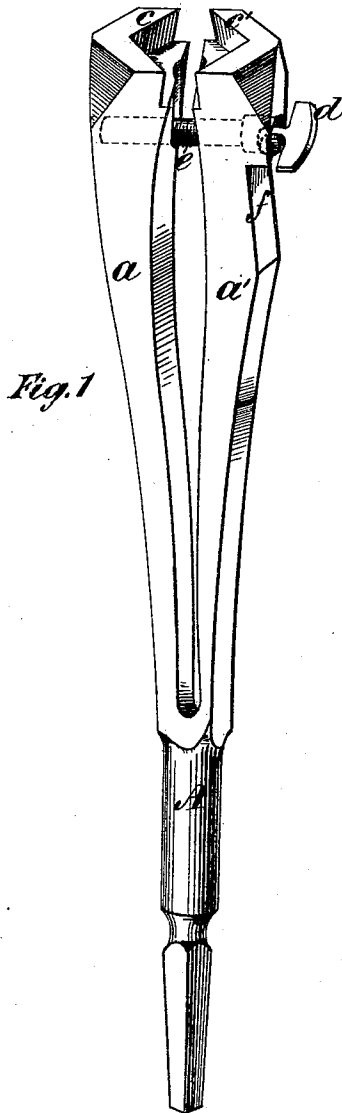


J. E. UNDERWOOD.
WRENCH.

No. 179,628.

Patented July 4, 1876.



Witnesses:
J. H. Underwood
Clarence H. Birdseye

James E. Underwood

UNITED STATES PATENT OFFICE.

JAMES E. UNDERWOOD, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN WRENCHES.

Specification forming part of Letters Patent No. **179,628**, dated July 4, 1876; application filed May 31, 1876.

To all whom it may concern:

Be it known that I, JAMES EDWARD UNDERWOOD, of the city of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Wrenches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

The object of my invention is to form and supply a wrench, made of steel or any desired metal, which can be used in an ordinary brace, like or similar to the manner in which auger and other bits, &c., are used and applied by mechanics for other purposes, and in positions where the use of the ordinary wrench is impracticable or difficult.

Figure 1 is a perspective view of the wrench. *a* and *a'* are its two arms or sides, which are united in the shank *A*. *c* and *c'* are the ends of these two sides, in each of which arms or sides is worked out or cast the hollow recess or die, in the form shown in the drawings at *c* and *c'*, so that whether the mouth of the wrench is either enlarged or diminished its angles are right angles. *e* is the screw, working in the two arms, by which the mouth of the wrench is enlarged or diminished, to suit the head of the bolt, nut, or screw which is designed to be operated on. *d* is the head or handle of the screw, which is fastened with a toggle or elbow joint, so as to lie down against the depressed

surface *f*, and so not increase the width of the head of the wrench. Fig. 2 is a vertical section of the wrench through the jaws, and shows the screw and the toggle or elbow joint.

By working the screw *e* in the adjustable wrench, the mouth of the wrench can be made to fit almost any desired form and size of nut, head, or bolt, and can be applied with facility and ease where an ordinary wrench cannot be used. Where the screw passes through the arm *a'*, the aperture is made considerably larger than the thread of the screw, so as not to bind against the sides of the arm when the two arms are pressed to or from each other. A thread may be worked on the arms *a a'*, to which a ring may be fitted, and the working of this ring will also enlarge or diminish the mouth of the wrench; but the screw is preferable, as it secures strength at the point where it is most required.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination of the arms *a* and *a'*, and the jaws *c c'*, with the screw *e*, made with a head and toggle or elbow joint, *d*, all in connection with the shank *A*, substantially in the form, and as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 24th day of May, 1876.

JAMES E. UNDERWOOD.

Witnesses:

F. H. UNDERWOOD,
CLARENCE F. BIRDSEY.