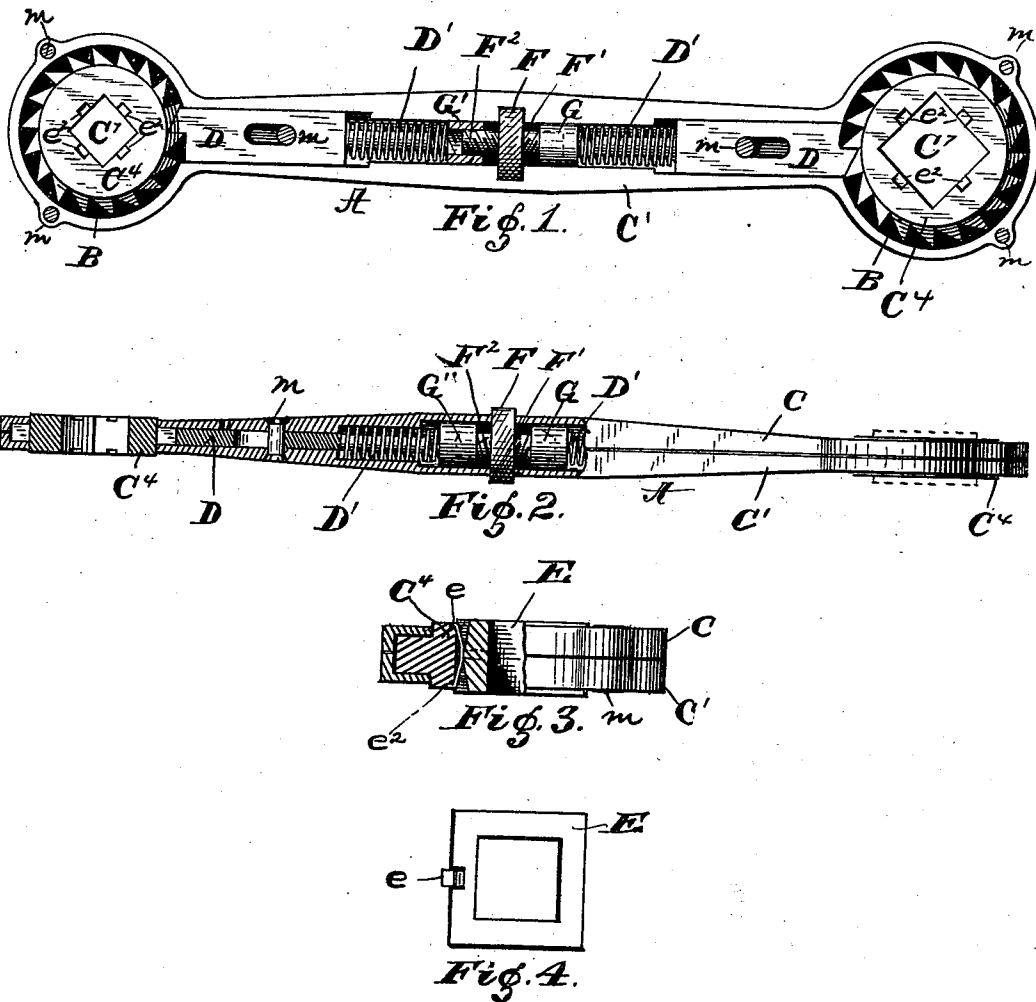


(No Model.)

A. BUTTERFIELD.  
WRENCH.

No. 562,117.

Patented June 16, 1896.



Witnesses;  
F. H. Hoerner.  
L. A. McInturn

Inventor,  
Alvor Butterfield,  
By Joseph A. McInturn  
Attorney,

# UNITED STATES PATENT OFFICE.

ALVOR BUTTERFIELD, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF TO LEWIS N. HOWARD, OF SAME PLACE.

## WRENCH.

SPECIFICATION forming part of Letters Patent No. 562,117, dated June 16, 1896.

Application filed January 30, 1896. Serial No. 577,382. (No model.)

*To all whom it may concern:*

Be it known that I, ALVOR BUTTERFIELD, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements 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 appertains to make and use the same.

The object of this invention is to provide a wrench for screwing nuts on and off of bolts which are so placed as to be inaccessible, or accessible with great difficulty, with the wrench of usual construction, because of the lack of room in which to operate said wrench.

I accomplish the object of the invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of my improved wrench with the upper part of the two-part casing removed so as to expose the inside mechanism. The view shows a part of this inside mechanism in section. Fig. 2 is an edge view of the wrench, showing same partly sectioned to disclose the interior parts. Fig. 3 is an enlarged view of one of the heads of the wrench broken away in part to show the fastening for holding the removable bushing by which different-sized nuts are turned. The figure shows the bushing in place. Fig. 4 is a plan view of the said bushing.

Similar letters of reference indicate like parts throughout the several views of the drawings.

A represents the body of the wrench, and B circular chambers at each end of the body portion, within which ratchet-wheels or disks C<sup>1</sup> are mounted. The casing in which the operative mechanism of the wrench is located is divided longitudinally into two preferably equal parts C and C', as shown in Fig. 2. The chambers B are provided with concentric circular openings through both of the flat sides of the said chambers, and the ratchet-wheels C<sup>1</sup> have hubs extending beyond the planes of the ratchets. These hubs are projected through the circular openings in the walls of the chamber and fit snugly therein. They are provided with openings C', extending

through the hub and made in size and shape to fit the nut to be turned.

D are dogs mounted in suitable ways formed in the handle of the wrench and having longitudinal reciprocating movement. The outer end of each of the dogs is provided with a tooth to engage one of the ratchets on the adjacent hub or disk C<sup>1</sup>. Coiled springs D' press the dogs against the disks C<sup>1</sup> and into engagement with the ratchets. This construction enables the handle of the wrench to be turned in one direction around the disk while the disk remains immovable, but on the return stroke of the handle the dog will engage the ratchet and rotate the disk. A nut engaged by the opening in the disk will accordingly be turned when the disk is turned and will be screwed on or off according to the direction of the sloping face of the ratchet-teeth. This direction can be changed by turning the wrench over, so that, if the wrench is in such position that it screws the nut onto the bolt, by turning it the other side up the wrench will be in position to screw the nut off. The mechanism is duplicated on each of the two ends of the wrench for the purpose of fitting two sizes of nuts. Where more than two sizes of nuts are to be operated on, the change will be effected by means of removable bushings E, made to fit into the opening in the disks, and having smaller openings in the said bushing to fit the smaller-sized nut. These bushings will be held in place by the spring-fastenings e with end hooks, which fit into notches e<sup>2</sup> in both faces of the hub. The bushing need only be provided with a single spring-catch, but in order that the bushing may be applied without special pains to adjust it a series of notches will be provided, as shown in Fig. 1.

Should the nut be quite loose on its bolt, the wrench in turning it would simply carry it forward and back again if the dog worked at all hard, owing to the too great pressure exerted by the spring. In order to adjust the pressure exerted by the spring against the dog, I provide the milled wheel F, having the lateral integral bolts F' and F<sup>2</sup>, with right and left hand threads cut thereon. These work into the threaded sleeves G and G' and the

sleeves bear against the coiled springs. The milled wheel projects through the walls of the casing and can be turned by the fingers of the operator so as to tighten up or loosen the springs, thereby making the disks work harder or easier, as desired.

The two parts of the casing are held together by the rivets *m*.

Having thus fully described my invention, what I claim as new, and wish to secure by Letters Patent of the United States, is—

1. In a wrench, the combination with the disk *C*<sup>4</sup> mounted in the casing and operated as described and having the notches *e*<sup>2</sup>, of the bushing *E* adapted to fit in the opening in the disk for the purposes specified, and having the spring *e* with two end hooks to engage the notches in the two opposite sides of the disk, substantially as described and for the purposes specified.

2. In a wrench, the combination with the body portion forming the casing and handle of the wrench and having chambers at each

end of the casing, a pair of rotary disks each having openings to engage the nut, said disks being mounted, one in each of the chambers at the ends of the casing, and having circumferential ratchet-teeth, a pair of dogs to engage the ratchet-teeth on the disks, each having longitudinally-reciprocating adjustments, and a pair of springs to press the dogs against the disks, of a milled wheel mounted so as to project through the casing and having oppositely-threaded bolts integral therewith and projected laterally therefrom, and threaded sleeves working on said threaded bolts and bearing against the springs in the manner substantially as shown and for the purposes specified.

In testimony whereof I affix my signature in presence of two witnesses.

ALVOR BUTTERFIELD.

Witnesses:

JOSEPH A. MINTURN,  
F. W. WOERNER.