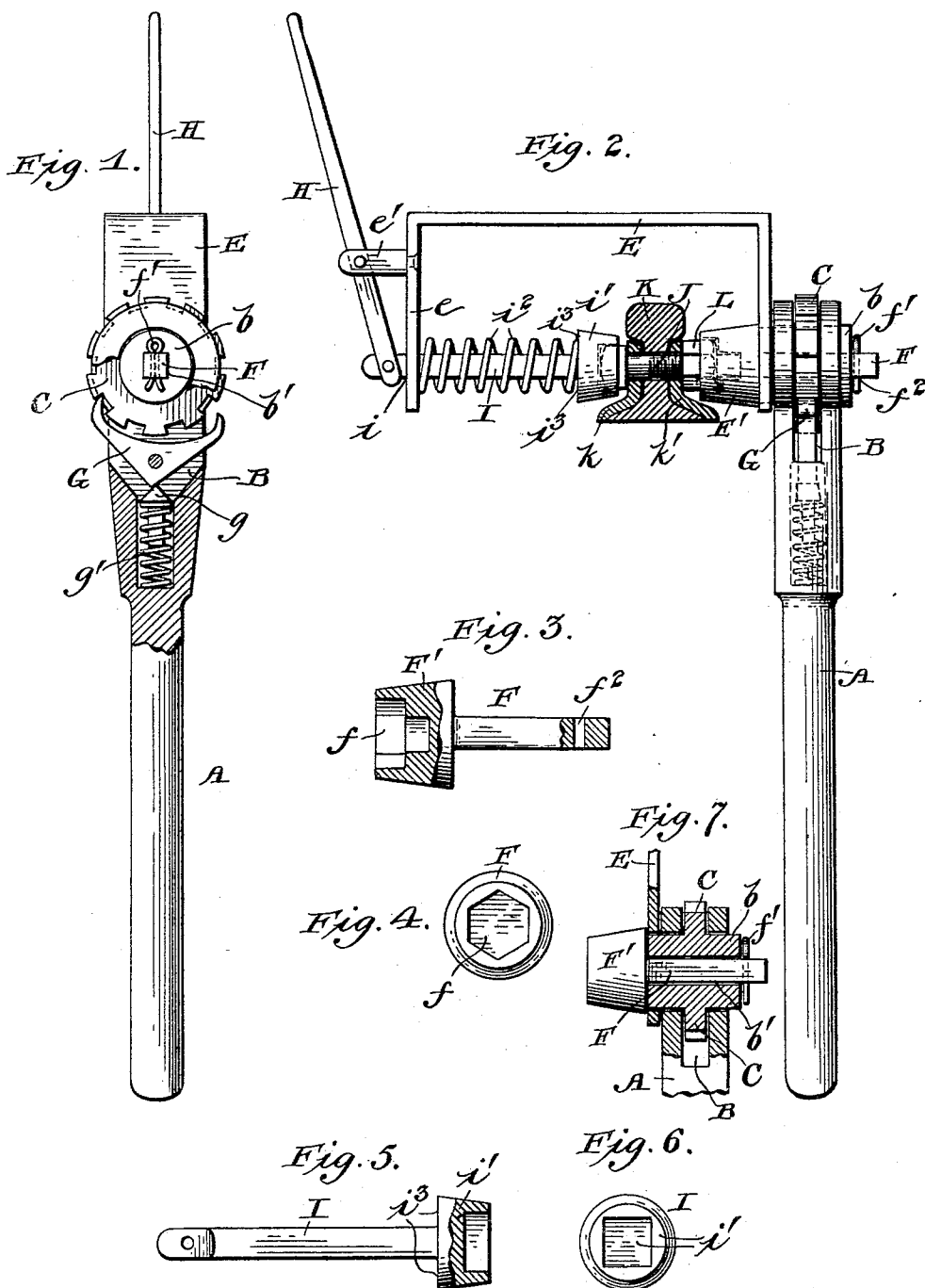


(No Model.)

E. CUNNINGHAM.  
WRENCH.

No. 569,372.

Patented Oct. 13, 1896.



WITNESSES

*Geverance.*  
*R. S. Bacon*

INVENTOR

*Edward Cunningham*  
*by*  
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*and v. v.*

# UNITED STATES PATENT OFFICE.

EDWARD CUNNINGHAM, OF HORTON, KANSAS.

## WRENCH.

SPECIFICATION forming part of Letters Patent No. 569,372, dated October 13, 1896.

Application filed March 23, 1896. Serial No. 584,470. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD CUNNINGHAM, a citizen of the United States, residing at Horton, in the county of Brown and State of Kansas, 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.

My invention relates to an improvement in clamping-wrenches; and it consists in the peculiar construction, arrangement, and combination of parts hereinafter described, and more specifically pointed out in the claims.

The object of my invention is the provision of a simple, inexpensive, and practical clamping-wrench, more particularly adapted for tightening nuts on rail-joints or other structures where it is desired to overcome the tendency of the bolt to turn.

Another object is the provision of a wrench of the character described which shall be reversible in its action without the necessity of removing the same from the nut.

By the construction hereinafter described it will be apparent that a wrench constructed according to the principles of my invention will effectually accomplish the objects sought without adding very materially to the cost of the same. These objects are attained by the mechanism shown in the accompanying drawings, wherein like letters of reference indicate corresponding parts in the several views, in which—

Figure 1 is an end view of my invention, partly in section. Fig. 2 is a front elevation, partly in section. Figs. 3, 4, 5, and 6 are detail views of the slide-bars and their several forms of head, and Fig. 7 is a horizontal section of the stud-bolt *b*.

In the drawings, A is the handle, bifurcated at its upper end to form a slot B. A ratchet C is held within the slot B of the handle A by means of a hollow stud-bolt *b*, to which it is coupled, and which passes transversely through said handle and through one arm of the frame E. The stud-bolt *b* is provided with a square chamber *b'*, passing longitudinally through the same. A slide-bar F, with a head F', which latter is formed with a recessed inner face or pocket *f* to receive the

nut, is inserted within the chamber *b'* and is secured therein by a cotter-pin *f'*, passing through a suitable opening *f*<sup>2</sup> in the end of the slide-bar F. Owing to the fact that the shape of nuts vary, some being square and others hexagon-shaped, it is difficult to provide a head which will meet the requirements of the different shapes without sacrificing its simplicity. To meet this requirement, I provide several slide-bars which are identical in all respects save the formation of the head. The latter are made in different forms. For a square nut the opening in the head is square and for a hexagonal nut the opening or pocket is of a slightly different construction, so as to conform to the difference in the shape of the nut.

To remove one form of bar and substitute the other form, it is only necessary to withdraw the cotter-pin and slide the bar out of the chamber in the stud-bolt and replace it by the other form.

A right-and-left pawl G, having inclined sides, is pivotally secured within the slot B and is controlled by a pivot-dog *g*, having a wedge-shaped head mounted within the slot B. A retracting-spring *g'* is coiled about the shank of the dog *g* for the usual purpose. By this form of construction it will be apparent that by pressing upon the pawl at one side the dog *g* is depressed sufficiently to allow the pawl to engage with the corresponding side of the ratchet. The spring *g'* immediately forces the dog *g* into its normal position against the inclined side of the pawl and holds the same in position against the ratchet, while the peculiar construction of the head of the dog permits the necessary movement of the pawl while the ratchet is being rotated. This insures a ready means for reversing the ratchet.

The frame E is provided about midway of its outer arm *e* with a shoulder *e'*, rigidly secured to the frame, and to which is pivoted the lever H, the said shoulder *e'* acting as a fulcrum for the said lever, which is also pivoted at its lower end to the slide-bar I, which passes through the frame at *i* and terminates in a head *i'*, which is recessed to receive the head of the bolt J. The same reasons which necessitate a plurality of slide-bars F govern as to the slide-bars I, and they are likewise pro-

vided with heads to suit the formation of differently-shaped bolts. To remove one form and substitute another, it is only necessary to remove the pivot-bolt at the lower end of the lever H and pull the slide-bar out of the frame E and replace it with the form desired.

A spiral spring  $i^2$  is sleeved upon the slide-bar I, one end of which abuts against the inner face of the outer arm of the frame and the other end against the shoulder  $i^3$  on the head  $i'$  of the slide-bar I.

K designates the rail,  $k$   $k'$  the fish-plates or angle-bars, and L the nut.

15 In operation the lever H is pulled down until the slide-bar I is drawn back far enough to permit the head F' to receive the nut L. The head of the bolt J is then inserted in the cavity of the head  $i'$  of the slide-bar I. The lever H is then released and the spiral spring  $i^2$  forces the slide-bar against the bolt J, which is held in the cavity of the head  $i'$  in such manner as to prevent its turning. As the bolt J is drawn closer to the rail by the turning of the nut the slide-bar is forced by the relaxation of the spring in the same direction at the same ratio of speed, thus retaining the head of the bolt within the cavity and thereby preventing any turning of the bolt by the rotation of the nut.

20 The pocket  $f$  of the head F' is deep enough to provide room for the threaded end of the bolt J, thereby permitting the nut L to be forced close home to the fish-plate and to bring the bolt J to its head on the other side of the rail. To release the clamping mechanism, the lever H is pulled down as before and the head of the bolt J released, and the head F' is withdrawn from contact with the nut L, when the device may be readily lifted free of contact with the rail.

25 It will be seen that a wrench constructed according to my invention will give greater power and purchase than those heretofore in use and will permit of increased strain upon the wrench proper without danger to the latter.

I am aware that certain features of my invention are not broadly new, and I do not claim the same broadly.

I am also aware that many minor changes in the construction and arrangement of the several parts can be made without departing from the spirit and principle of my invention.

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

1. In a wrench, the combination, with a ratchet, of a pivotally-secured right-and-left pawl having inclined sides, a pivot-dog having a wedge-shaped head, a retracting-spring

for said dog, a stud-bolt provided with an angular chamber, a slide-bar with a recessed head inserted within said chamber, a frame mounted upon said stud-bolt, said frame having arms to one of which is secured a shoulder, a lever pivoted to said shoulder and, at its lower end, to a slide-bar passing through said arm of said frame, a spring for said slide-bar, and a recessed head upon the inner end of said slide-bar, substantially as described. 65 70

2. In a wrench, the combination, with a handle having a bifurcated upper end, of a ratchet coupled to a hollow stud-bolt passing transversely through said handle, a slide-bar with a recessed head secured within the chamber in said hollow stud-bolt, a right-and-left pawl having inclined sides pivoted within said handle, a dog having a wedge-shaped head mounted within said handle, said dog having a retracting-spring coiled upon its shank, a frame carried by the stud-bolt and having arms, the outer arm provided with a shoulder to which is pivoted a lever, said shoulder acting as a fulcrum for said lever, a slide-bar passing through said arm and connected to the lower end of said lever at its outer end and its inner end terminating in a head having a recessed outer face and provided with a shoulder against which one end of a spring upon said slide-bar abuts, the other end of said spring abutting against the inner face of said arm of the frame, substantially as described. 75 80 85 90

3. In a wrench, the combination, with the handle, of a ratchet and pawl, the hollow stud-bolt  $b$ , the slide-bar F with recessed head F', the frame E, the lever H pivoted on the fulcrum  $e$  and to the slide-bar I passing through said frame E, said slide-bar provided with the recessed head  $i'$  adapted to receive the head of the bolt J and to retain the same in its normal position, substantially as described. 95 100

4. In a wrench, the combination, with the handle, of a ratchet, pawl and pivot-dog, a stud-bolt supporting said ratchet and the frame E, a slide-bar F having a recessed head F' adapted to receive the nut L and the threaded end of the bolt J, a lever fulcrumed to said frame and pivoted to a slide-bar passing through one arm of said frame, said bar carrying a spring and terminating in a shouldered head whose outer face is recessed to receive the head of the bolt J, substantially as described. 105 110 115

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

EDWARD CUNNINGHAM.

Witnesses:

HENRY W. CADOTT,  
P. E. MCCOIN.