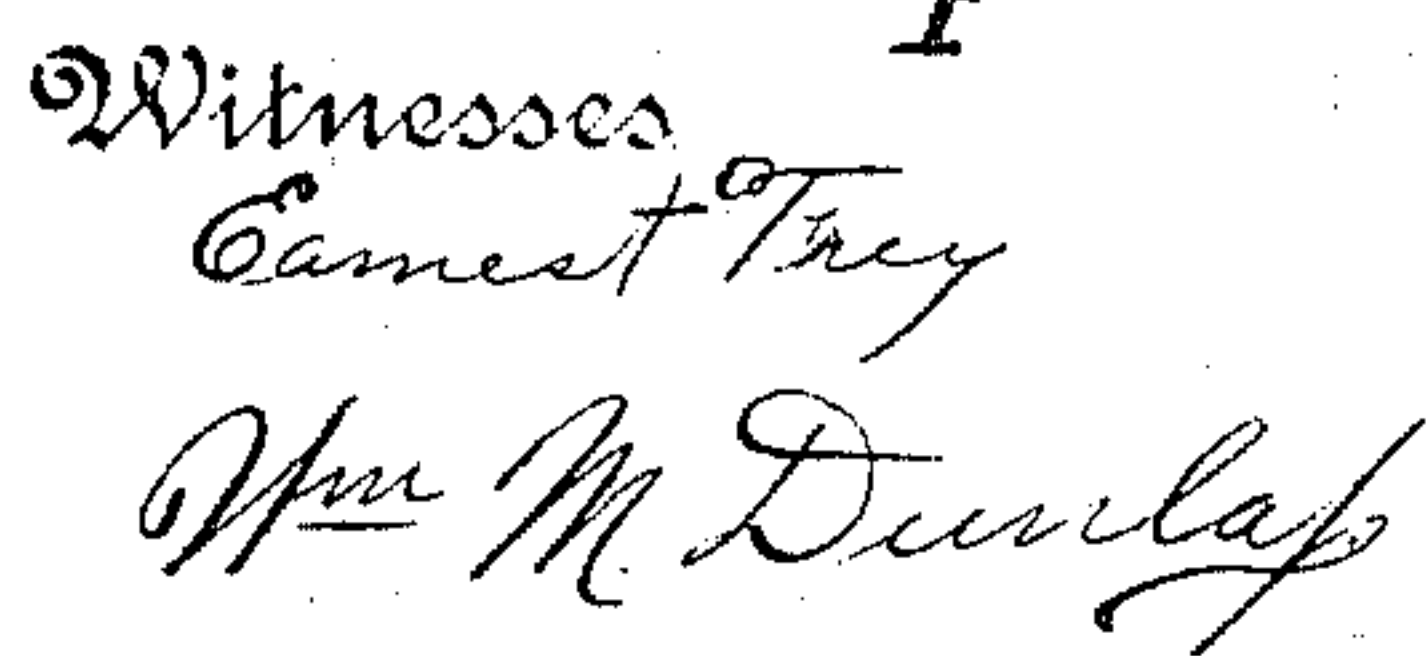


E. T. EVANS.  
RATCHET WRENCH.

Patented May 4, 1897.



Inventor  
**EVAN T. EVANS.**  
By Attorney  
*Heber S. Parmor,*



# UNITED STATES PATENT OFFICE.

EVAN T. EVANS, OF KITCHEN, OHIO, ASSIGNOR OF ONE-HALF TO EBENEZER EVANS AND WILLIAM J. JENKINS, OF SAME PLACE.

## RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 581,905, dated May 4, 1897.

Application filed October 8, 1896. Serial No. 608,224. (No model.)

*To all whom it may concern:*

Be it known that I, EVAN T. EVANS, a citizen of the United States, residing at Kitchen, in the county of Jackson and State of Ohio, have  
5 invented certain new and useful Improvements in Ratchet-Wrenches; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable  
10 others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to ratchet-wrenches of  
15 the class provided with a main shaft, carrying a head for engaging a nut, and the means of revolving said shaft in either direction, the same being particularly adapted to be used  
20 where the nut is near the ground or floor or is sunk below surrounding surfaces, and especially for placing in position and removing nuts upon railway-rails.

The objects of my invention are to provide a ratchet-wrench of that class that will  
25 be reasonably simple in construction, strong and durable, effective in operation, and having a ready means of reversing the ratchets, and adapted to receive heads of various sizes to fit any size nuts.

30 My invention consists in the construction and combination of the various parts shown in the accompanying drawings and described in the following specification.

In the drawings, Figure 1 is a perspective  
35 view of the wrench as it appears when applied to a nut. Fig. 2 is a vertical sectional view, a part of the lever-handle being broken away. Fig. 3 is a cross-sectional view taken on the line 3 3 of Fig. 2. Fig. 4 is a plan view of the  
40 spring which holds the dogs in contact with the ratchet-wheel, and Fig. 5 is a plan view of the key which controls the dogs in their engagement with the ratchet-wheel.

The shaft A is shouldered off at the outer  
45 end to form a bearing for the loosely-revoluble handhold B, which is cupped out at *h* to receive a button or circular nut *i*, which is adapted to be screwed upon the threaded end  
50 *j* of the shaft A and when in position to lie within the cup *h* within the handhold B, as

shown in Fig. 2. The opposite end of the shaft A is of greater diameter and is provided with the square opening *k*, which receives the shank of the head C. Immediately back of the enlarged end of the shaft is an annular shoulder  
55 *l*, said shoulder forming a bearing for one side of the casing *m* of the operating-lever D. A shoulder-ring E, fitting around the shaft A and secured thereto by a set-screw *e*, forms the bearing for the opposite side of the casing *m*.  
60

The shaft A is provided with two raised portions *n* immediately back of the shoulders  
65 *l*, which act as keys to hold the ratchet-wheel F immovable on the shaft A between the casings *m* of the lever D. The dogs *o* have each  
70 a small opening *r*, through which pass the straight portions *s* of the spring G. The dogs *o* are pivotally mounted within said casings upon the pin *p*. The spring G is so constructed as to constantly press the lower ends of the  
75 dogs *o* into contact with the ratchet-wheel F.

The key H enters the openings in the casings, one side having a small opening *t* and the other side having an elongated opening *u*,  
80 through which the depending portion *v* passes when placing the key in position. The key is secured by the pin *y* and is retained in position by means of a coil-spring *w*, which encircles the extending shank *x* between the casing *m* and the depending portion *v*. In  
85 the casing *m*, next the elongated opening *u*, are two similar openings *z*, extending therefrom at an angle, as shown in Figs. 1, and 3.

When it is desired to release one of the dogs from the ratchet-wheel, the key H is turned  
90 until the depending portion *v* comes in contact with the dog and presses it away from the ratchet. The key is held in that position, with the depending portion *v* extending through one of the openings *z* in the casings  
95 *m*, by means of the spring *w*. The portion *v*, bearing against the dog within the opening *z*, is prevented from turning until the key is again pressed out of the opening *z*.

The head C is provided with an angular  
100 opening *a*, which engages the nut *b*. Back of the opening *a* extends a smaller opening *c*, which is adapted to receive the bolt *d* when the wrench is being operated.

The heads C may be provided with open-



ings *a* of different sizes, so as to fit various-sized nuts, and each wrench may be provided with an assortment of different-sized heads.

In operation a head having an opening of  
5 suitable size to receive the nut is placed within the opening *k* in the shaft A. The dogs *o* are set to turn either to the right or to the left, as is desired. The operator then grasps the handle of the lever D in one hand and the  
10 revoluble handhold B in the other, and after placing the head over the nut operates the wrench by moving the lever D backward and forward, which causes the shaft A to revolve, thereby revolving the head C and turning the  
15 nut. The object in the revoluble handhold B is to enable the operator to hold the head C in contact with the nut *b* without having the handhold turn within the hand, as would be the case were it rigidly attached to the  
20 shaft.

It will be seen that with this wrench a nut can be put on or taken off in a corner, near the ground or floor, or when situated in a depressed inclosure or sunk below the surrounding  
25 surfaces, that the operation of putting on or removing the nuts can be expeditiously performed, and that the wrench can be instantly changed to turn from right to left, or vice versa, without removing it from the nut being operated upon.  
30

My improved ratchet-wrench is especially adapted to be used upon the nuts on railway-rails, as it will effect a great saving of time and labor over the common S-wrench ordinarily used for that purpose.  
35

Having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a ratchet-wrench of the class described,  
40 the combination with the shaft A, having the revoluble handhold B, secured by the button *i*; the enlarged end having the opening *k*, and annular shoulder *l*, of the head C, having the opening *a*; the shoulder-ring E, the  
45 ratchet-wheel F, the lever D, having the casing *m*, carrying the dogs *o*, controlled by the spring G; and the key H, having the depending portion *v*, and provided with the coil-spring *w*, all substantially as shown and de-  
50 scribed.

2. The combination in a ratchet-wrench, having a revoluble shaft A, carrying a ratchet-wheel F, immovable thereon; the hand-lever D, having depending casings *m*, through which  
55 the shaft A, passes, the openings in said casings having a bearing upon a shoulder *l*, on the

shaft A, and upon a shouldered ring E; dogs *o*, pivotally mounted within the lever D, and held normally in contact with the ratchet-wheel F, by means of a spring G, and adapted  
60 to be thrown out of contact with said ratchet-wheel by means of the key H, having the depending portion *v*, and carrying a coil-spring *w*, substantially as set forth.

3. The combination in a ratchet-wrench, of  
65 a shaft A, having the ratchet-wheel F, secured thereon; a hand-lever D, adapted to revolve upon bearings on either side of the ratchet-wheel, and provided with dogs *o*, engaging the ratchet-wheel, and held normally in con-  
70 tact therewith by means of the spring G, the bent members of which extend through openings *r*, in said dogs; a key H, having a depending portion *v*, whereby the dogs *o*, may be alternately thrown out of contact with the  
75 ratchet-wheel F, substantially as set forth.

4. The combination in a ratchet-wrench, of a removable nut engaging head C, with a shaft A, having an enlarged end, provided with an opening *k*, and shoulder *l*, and having a rev-  
80 oluble handhold B, secured to the opposite end by means of the threaded button *i*; a ratchet-wheel F, secured to the shaft A, by means of the keys *n*, the shouldered ring E, upon the shaft A; the hand-lever D, having  
85 the depending casings *m*, and carrying the dogs *o*, having the spring G; a key H, having a depending portion *v*, and held in its normal position by means of a coil-spring *w*, substan-  
90 tially as shown and described.

5. In combination in a ratchet-wrench, the shaft A, having the enlarged end provided with the opening *k*, the shoulder *l*, the hand-  
95 hold B, the button *i*, the shouldered ring E, the head C, having the angular opening *a*, the ratchet-wheel F, the lever D, having the casings *m*, the dogs *o*, pivoted thereto by means of the pin *p*, the spring G, controlling the dogs *o*, the key H, having the depending portion *v*, adapted to engage said dogs, and held  
100 in its normal position by means of a coil-spring *w*; elongated openings *u*, and *z*, adapted to receive the depending portion *v*, of the key H, for the purpose of holding the dogs *o*, in the desired position, substantially as shown  
105 and described.

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

EVAN T. EVANS.

Witnesses:

WILLIAM SHOVER,  
ELMER YATES.