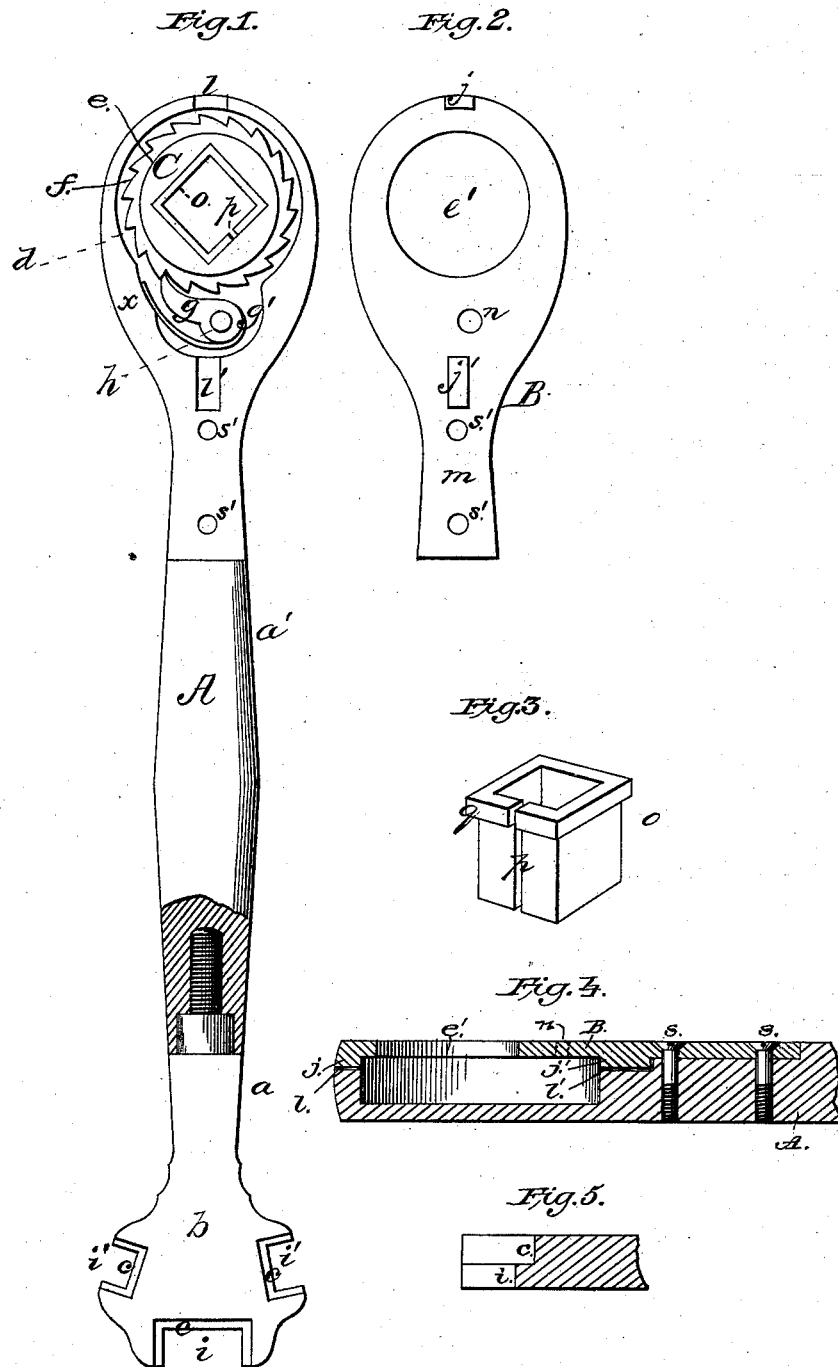


R. MIKKELSON.
Wrench.

No. 216,690.

Patented June 17, 1879.



Witnesses:
John A. Allen.
F. J. Massi

Inventor:
Rasmus Mikkelsen,
by E. W. Anderson.

UNITED STATES PATENT OFFICE.

RASMUS MIKKELSON, OF LODI, WISCONSIN.

IMPROVEMENT IN WRENCHES.

Specification forming part of Letters Patent No. **216,690**, dated June 17, 1879; application filed February 26, 1879.

To all whom it may concern:

Be it known that I, RASMUS MIKKELSON, of Lodi, in the State of Wisconsin, have invented a new and valuable Improvement in Wrenches; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a top view of the wrench with the face-plate removed. Fig. 2 is a bottom view of the face-plate, and Fig. 3 is a perspective view of the bush. Figs. 4 and 5 are details.

This invention has relation to improvements in ratchet-wrenches; and the nature of the invention consists in a certain arrangement and novel construction of the parts of the wrench, as will be hereinafter more fully set forth.

In the annexed drawings, the letter A designates the metallic handle or body of the wrench, consisting usually of two sections, *a* and *a'*, screwed together. The section *a* has at its end an angular enlargement, *b*, having in its end a notch, *i*, and in its sides other notches, *i'*, differing in size from each other. They may consequently be used in connection with different sizes of nuts. These notches have each upon one edge a U-shaped flange, *c*, forming, with the notch, a rectangular shoulder, and again subdividing it, so that each notch is adapted for use in connection with two sizes of nuts. There being three of these notches, I am by this construction able to set up six different sizes of nuts.

The free end of section *a'* is expanded laterally in oval form, and in this enlargement *x* is made a circular recess, *d*, having in its bottom a concentric opening of less diameter. As shown in Fig. 1, this portion of the wrench is rabbeted, and is raised to a level with the remainder of the wrench by a removable face-plate, B, having in it, opposite to opening *e*, a similar opening, *e'*.

C indicates a cylindrical metallic nut-seat, having a central exterior ratcheted annular rib, *f*. This nut-seat is inserted in recess *d*, and its ends fit snugly and have their bear-

ings in the openings *e e'* aforesaid, so that it has free rotation relative to the handle in one direction. It is prevented from rotating in the opposite direction by means of a spring-actuated pawl, *g*, arranged in a recess, *g'*, near the junction of the enlargement and handle, and turning upon a projecting cylindrical stud, *h*.

l l' indicate mortises, formed diametrically opposite each other in the line of the long axis of the wrench, the one being situated at the extreme outer end of the wrench, and the other at the junction of the recessed enlargement and handle of the same, and being of oblong form.

The face-plate B has projecting from its under side the dowels *j j'*, corresponding in form to the mortises *l l'*, respectively, and has a perforation, *n*, in which is received the end of the pawl-post *h*. These devices effectually hold the face-plate B against endwise or edgewise displacement, thus relieving the screws whereby said plate is secured to the body of the wrench from all undue strain. These screws pass through holes *s'* in a stem, *m*, of the face-plate into the handle, and simply serve to hold the said plate against lateral displacement.

The opening to receive the nut in seat C may be of square, pentagonal, hexagonal, and other forms, and is provided with a metallic bush, *o*, of corresponding form. This is usually of spring metal, and is cleft through at one side, as shown at *p*, Fig. 1. By compressing this bush it is readily inserted in the nut-opening, and is prevented from escaping therefrom casually by its reaction, which causes it to bind in the opening.

The bush *o* is provided at one end with a stop-shoulder, *q*, the object of which is to prevent it from being thrust through the opening of the nut-seat. These bushes are readily removed, and are of different thicknesses, to adapt them to nuts of various sizes.

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

The combination, with the handle A, having oblong enlargement *x*, provided with cylindrical recess *d*, having circular concentric

opening *e* in its bottom, forming the rabbet *f*, the ratchet-cylinder *C*, seated in said recess and controlled by a pawl, the pawl-post *h*, and the opposite mortises *l l'*, in the line of the longitudinal axis of the wrench, of the face-plate *B*, having dowels *j j'*, fitting snugly in said mortises, and a perforation, *n*, receiving the end of the pawl-post and the retainer-screws *s*, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

RASMUS MIKKELSON.

Witnesses:

EDWARD ANDREWS,
J. H. PALMER.