No. 630,819. Patented Aug. 8, 1899.

T. P. SAYERS.

ADJUSTABLE RATCHET WRENCH.

(Application filed Nov. 17, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

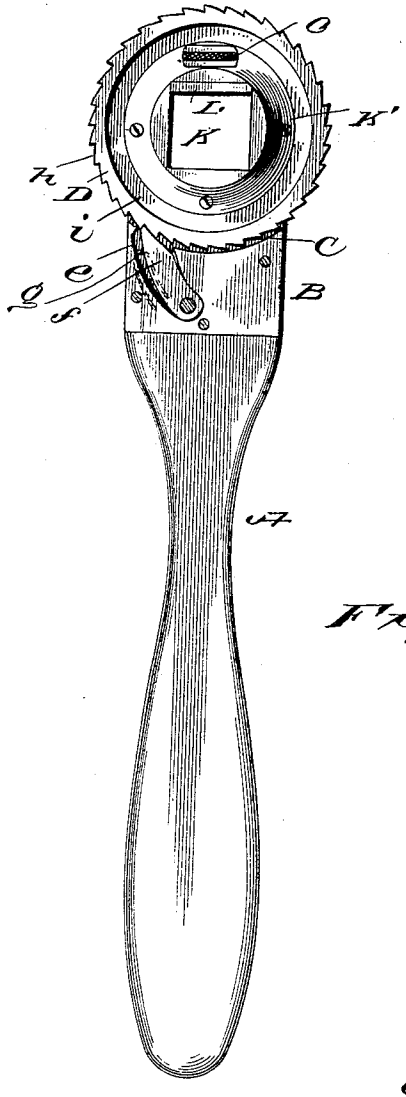


Fig. 2.

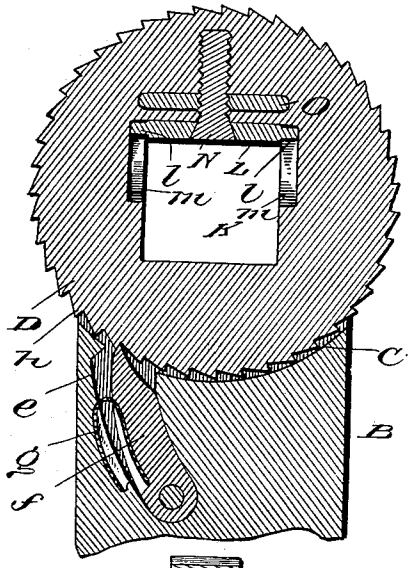


Fig. 3.

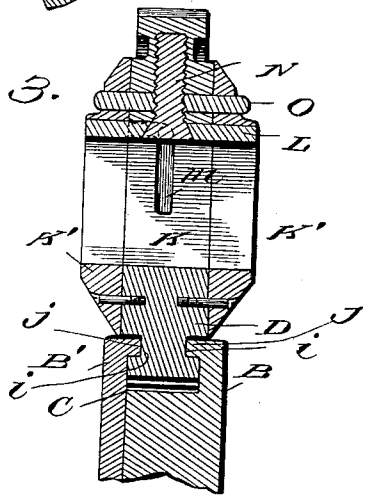
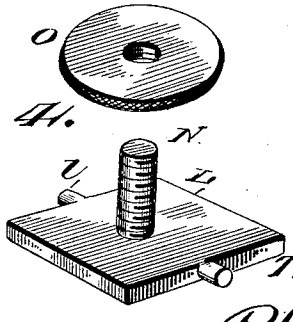


Fig. 4.



Witnesses
Jno. Finnie
C. E. Hines.

Inventor
Thomas P. Sayers
by R. H. B. Lacey
his Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 630,819. Patented Aug. 8, 1899.

T. P. SAYERS.

ADJUSTABLE RATCHET WRENCH.

(Application filed Nov. 17, 1898.)

(No Model.) 2 Sheets—Sheet 2.

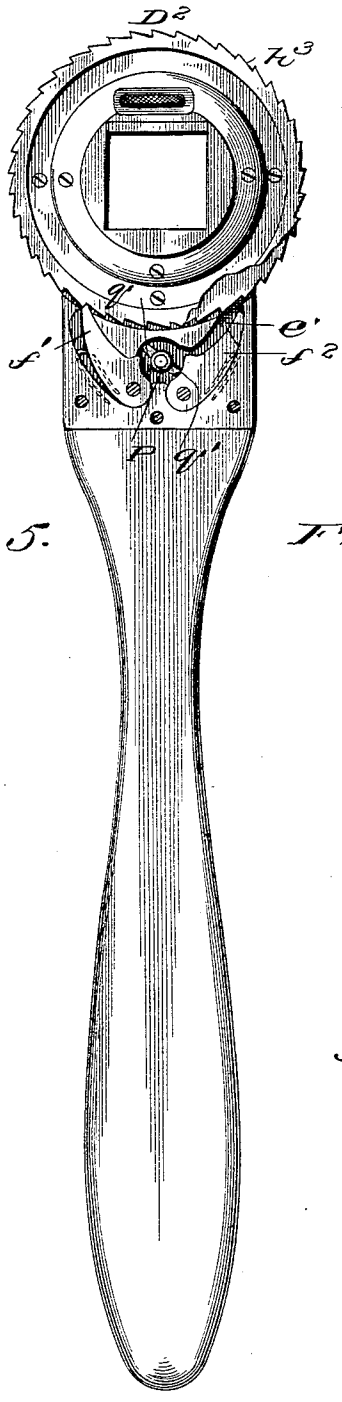


Fig. 5.

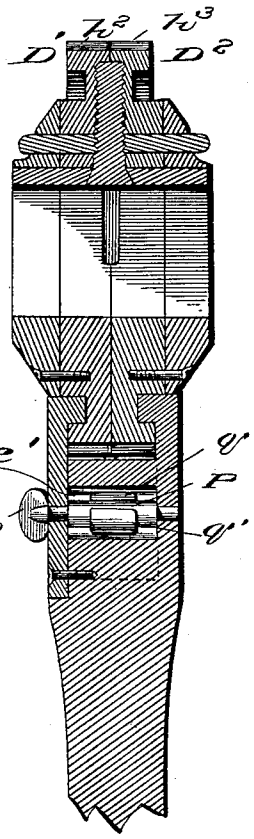


Fig. 6.

Fig. 7.

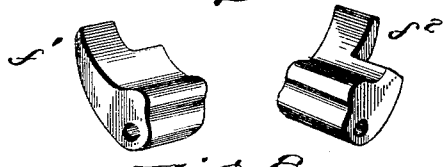
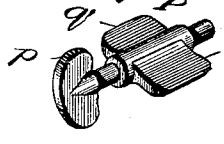


Fig. 8.



Witnesses

Jas. Finnie

C. C. Linen

Inventor

Thomas P. Sayers

by R. H. & R. Lacey.

his Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

THOMAS P. SAYERS, OF CAMBRIA, WYOMING, ASSIGNOR OF ONE-HALF TO PETER ANDERSON, OF SAME PLACE.

ADJUSTABLE RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 630,819, dated August 8, 1899.

Application filed November 17, 1898. Serial No. 696,721. (No model.)

To all whom it may concern:

Be it known that I, THOMAS P. SAYERS, a citizen of the United States, residing at Cambria, in the county of Weston and State of Wyoming, have invented certain new and useful Improvements in Adjustable Ratchet-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.

This invention relates to improvements in ratchet-wrenches; and it consists in certain novel features of construction and combinations of parts, as will be hereinafter more fully described, and particularly pointed out in the appended claims.

The object of the invention is to provide a ratchet-wrench which is simple and inexpensive in construction, efficient in operation, and embodies improved means for reducing the size of the nut-receiving opening to adapt the wrench for application to different-sized nuts, and, further, to provide such a wrench with detachable side sockets, which increase the capacity of the wrench for receiving nuts of different lengths and effectively adapt the same for operating close up to a railway-rail or other object to be bolted.

A further object is to provide in addition to these features a construction whereby the ratchet-wheel may be operated in either direction to apply or remove a nut, and pawls coacting therewith conveniently thrown into and out of operation by merely turning a key in one direction or the other.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of my improved wrench, the top plate being removed to expose the pawl. Fig. 2 is a longitudinal sectional view through the head and ratchet-wheel. Fig. 3 is a cross-sectional view thereof. Fig. 4 is a detail perspective view of the adjustable reducing plate and parts. Fig. 5 is a similar view to Fig. 1, showing a construction in which the ratchet-wheel is adapted to work in either direction. Fig. 6 is a cross-sectional view of the same. Fig. 7 is a detail perspective view showing the two pawls. Fig. 8 is a similar view of the operating-key.

Referring now more particularly to the drawings, wherein like reference-letters designate corresponding parts throughout the several views, A represents the handle of the wrench, which is enlarged at its inner end to form a head B, provided with a segmental recess C at its outer end to receive the ratchet-wheel D, and a chamber *e* communicating with said recess. Pivotally mounted in this chamber to move laterally of the head is a pawl *f*, which is normally held projected to engage the periphery of the wheel by a plate-spring *g*. This recess and chamber are closed at top by a plate B′, fastened in place by suitable clamping bolts or screws.

The ratchet-wheel D is provided, as usual, with ratchet-teeth *h* around its periphery and with grooves *i* in each side thereof, which are engaged by opposing segmental flanges *j*, formed on the inner sides of the bottom plate of the head and detachable plate B′. These grooves are circular in form, and hence the wheel is adapted to revolve freely in one direction on the flanges, but is held from revolving in the opposite direction by the pawl engaging said ratchet-teeth. An opening K is formed in the center of the wheel for the reception of a nut to be turned, and detachably secured upon opposite sides of the wheel by means of screws or other suitable fastening devices are sockets K′, which are preferably employed alone for turning narrow nuts. The openings in these socket-pieces are alined with the opening in the wheel and increase the capacity of the wrench for receiving long nuts and afford a long bearing, so that the nuts may be easily turned. As the socket-pieces also project laterally, they adapt the wheel for working close up to a railway-rail or other object being bolted, the wheel being held clear of the object while the socket-piece is worked up close thereto to screw the nut tightly home. When either socket-piece is broken or otherwise injured, it may be conveniently detached and replaced.

In order to adapt the wrench for operating nuts smaller than the nut-receiving opening in the wheel, a reducer is provided for decreasing the size of said opening. This reducer consists of a clamping-plate L, arranged to bridge across the openings in the wheel and

socket-pieces and provided with guide pins or lugs l to traverse grooves m, formed in the wheel. The plate is carried by a screw N, working in a threaded opening in the wheel, and this screw is adapted to be operated by a milled-edge nut O, occupying a slot extending transversely through the wheel and socket-pieces, so that the clamping-plate may be readily and quickly adjusted from the exterior.

In the construction shown in Figs. 5 and 6 the ratchet-wheel is formed of two parts or sections D' D^2, bolted or otherwise rigidly united and provided with right and left ratchet-teeth h^2 h^3. The chamber e' in the head B is also enlarged to receive a pair of pivoted spring-actuated pawls f' f^2, adapted to move in reverse directions and to respectively engage the said right and left ratchet-teeth. When it is desired to rotate the ratchet-wheel to the right, the pawl f' is engaged with the ratchet-teeth h^2; but when it is desired to rotate the ratchet-wheel in the reverse direction, or to the left the said pawl is retracted and the pawl f^2 is engaged with the ratchet-teeth h^2. To operate the pawls, a key P is employed, which is journaled in the top and bottom plates of the head and provided at its outer end with a finger-piece p. On the shank of the key are oppositely-projecting bits q q', which are adapted to engage curved faces f^3, formed on the inner sides of the pawls and terminating in shoulders f^4. The bits of the key are so arranged that when the bit q' engages the shoulder and rides upon the said curved face of the pawl f^2 the latter will be retracted against the tension of its spring, while the bit q will be out of contact with the pawl f', leaving the same free to be projected by its spring. The teeth of the pawls are oppositely arranged, the tooth of the pawl f' being located in the top, and the tooth of the pawl f^2 in the bottom, of the chamber e', so as to provide pawls of maximum strength, as well as to avoid interference.

This invention is especially applicable where but little space is afforded to operate it in, such as corners and holes where nuts are to be turned and where ordinary wrenches would be of no use, as sufficient space for the socket-piece only is needed to enable the wrench to engage a nut.

Having thus described the invention, what is claimed as new is—

1. A ratchet-wrench comprising in its construction a handle having a head at one end provided with a segmental recess, a chamber opening thereinto and a segmental flange at the outer edge of the recess, a cover-plate closing the chamber and provided with a similar segmental flange, a ratchet-wheel fitted in said recess and provided with annular grooves in opposite sides thereof to receive said segmental flanges and a nut-receiving opening, socket-pieces detachably secured to the sides of the wheel and having coinciding nut-receiving openings, pawl mechanism in the chamber of the head and adapted to engage the teeth of the wheel, a clamping-plate bridging across the openings in the wheel and socket-pieces so that the same may be used together or independently for receiving nuts of different sizes, a screw connected to the plate and working in a threaded opening in the wheel, and an adjusting-nut engaging the screw and occupying a transverse slot projecting through the head and both socket-pieces, substantially as described.

2. A ratchet-wrench comprising in its construction a handle provided at one end thereof with a head having a slot or recess therein with a communicating chamber and a segmental flange upon the outer end thereof, a detachable cover-plate closing the said slot and chamber at the top and provided with an opposing segmental flange, a ratchet-wheel composed of two like parts rigidly connected and closely abutting against each other, said parts being provided with coinciding nut-receiving openings, annular grooves to receive said segmental flanges and reversely-projecting teeth, spring-actuated reversely-movable pawls in said chamber to engage said ratchet-teeth, a key for alternately operating the pawls, a socket-piece detachably secured to the outer face of each wheel part and having a coinciding nut-receiving opening, a clamping-plate bridging across the openings in the wheel and socket-pieces so that the same may be used together or independently for receiving nuts of different sizes, a screw connected to the plate and working in a threaded opening in the wheel, and an adjusting-nut engaging the screw and occupying a transverse slot projecting through the head and both socket-pieces, substantially as described.

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

THOMAS P. SAYERS.

Witnesses:

ENOCH C. VANSTONE,

WALTER SCHOONMAKER.