M. VASSAR, 2d.

RATCHET-WRENCH.

No. 193,301. Patented July 17, 1877.

Fig. 1.

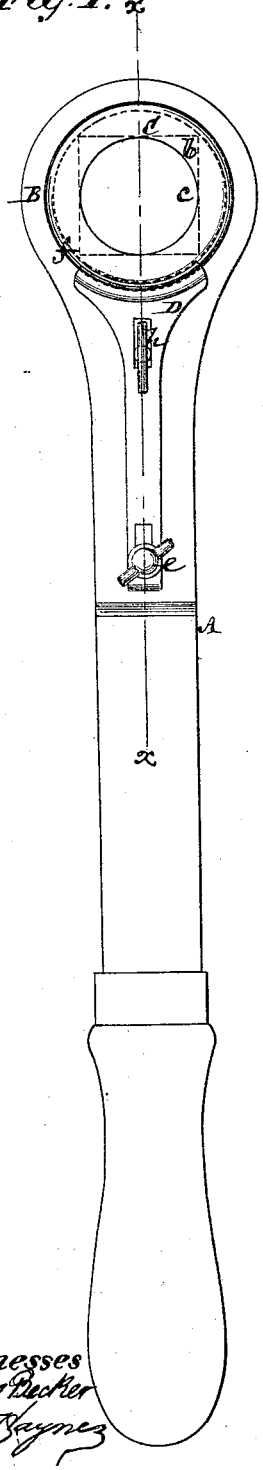


Fig. 2.

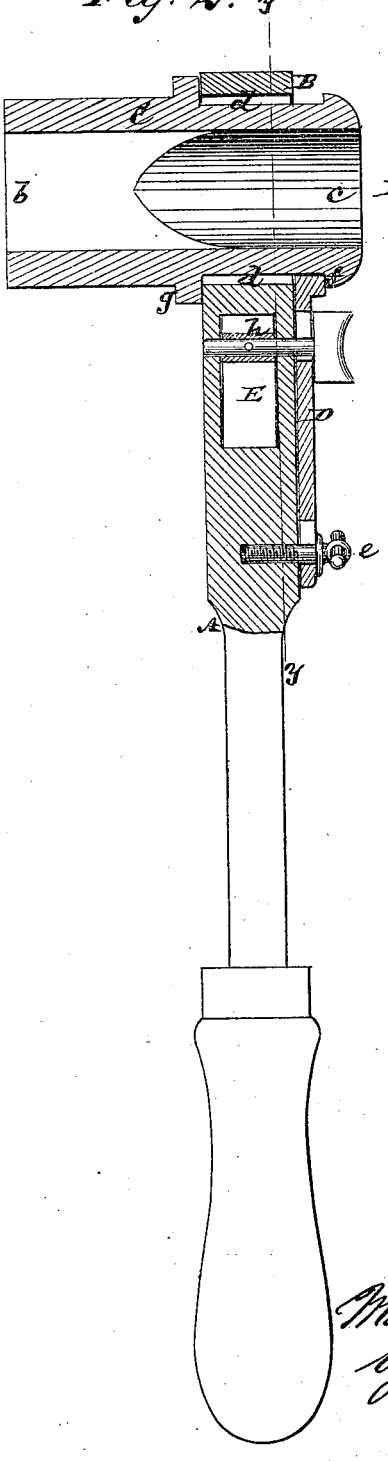
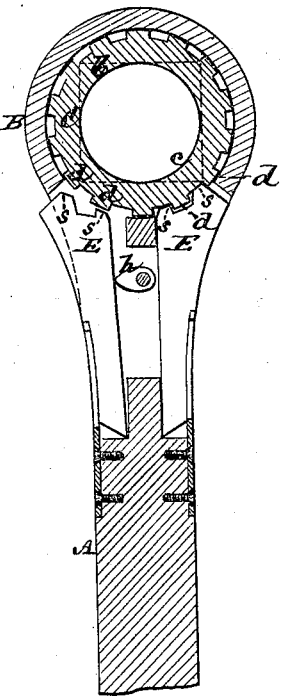


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

MATTHEW VASSAR, 2D, OF BALLSTON SPA, NEW YORK.

IMPROVEMENT IN RATCHET-WRENCHES.

Specification forming part of Letters Patent No. **193,301**, dated July 17, 1877; application filed April 3, 1877.

To all whom it may concern:

Be it known that I, MATTHEW VASSAR, 2d., of Ballston Spa, in the county of Saratoga and State of New York, have invented certain new and useful Improvements in Ratchet-Wrenches; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

The invention consists in a removable rotating socket or head, constructed to form the griping or holding portion of the wrench, and with a through passage in direction of the axis of rotation, whereby any number of such rotating sockets or sleeves of different sizes may be applied to the wrench, and the latter not only be adapted to bolt-heads, nuts, &c., of different dimensions, and the operating pawl or pawls of the wrench be brought to bear directly upon said removable rotating sockets, but the socketed wrench may be slipped over a bolt, and the square or wrenching end of the socket be applied to the nut or other part it is designed to fit.

Figure 1 in the drawing is an exterior view of a wrench in a plane at right angles to its axis of rotation, and having my invention applied. Fig. 2 is a mainly sectional view thereof on the line *x x*; and Fig. 3, a section of the same, in part, on the line *y y*.

A is the handle of the wrench, formed with an eye, B, for the socket or head C of the wrench to rotate in. The socket C is constructed to form a sleeve, being made with a passage through it, one end, *b*, of which is square or angular to take its gripe or hold on the article to be turned, and the other or opposite end *c* of which may be round or of any desired form. This through construction of the socket admits of the wrench containing it being slipped over a bolt, and the square or wrenching end *b* of the socket being applied to the nut or other part it is designed to fit, while said socket, being removable from the eye B by sliding it endwise therefrom, allows of sockets of different internal dimensions, to suit different sizes of work, being substituted therefor. Furthermore, said removable sockets or heads are provided on their exterior, where they fit through the eye B of the handle, with teeth *d*, for the pawl or pawls of the wrench to directly engage with, thus dispensing with a separate toothed head receiving the socket within it to effect the rotation of the socket.

A locking-slide, D, on the handle, capable of being secured or liberated by a set-screw, *e*, serves, by its engagement with and disengagement from a collar, *f*, on the socket as against another collar or shoulder, *g*, on the reverse side of the handle, to provide for the securing and removal of the socket, as required.

The rotation of the removable socket or head C, within the eye B, is effected, in either direction, by one or other of the spring-controlled pawls E E, on opposite sides of the handle A, according to which of said pawls is put into gear with the teeth *d* of the socket or head C, or both pawls may be put into gear with the teeth *d* of the rotating socket or head C, to hold the latter from rotating except in concert with the handle A. This reverse rotation of the socket or head of the wrench, or its joint rotation with the handle of the latter, the utility of which, being well known, needs no special comment here, may be effected by means of a cam, *h*, adjustable by button from the exterior of the handle, said cam, accordingly as its point is turned to the right or to the left, allowing one or other of the pawls E to engage with the socket C, or, by turning its point in line with the length of the handle, allowing both pawls to engage with said socket.

Each of these pawls, which are of a solid structure, fitting into recesses in the handle and controlled by springs applied to their backs, is flattened or spread out at its forward end, and constructed to form two or more teeth, *s s*, which are pitched to engage, when the pawls are thrown into gear, with a corresponding number of teeth *d* on the rotating socket or head C, whereby said pawls take an enlarged or diversified hold, and are prevented from stripping or slipping.

I claim—

The combination of the removable rotating socket or head C, having teeth *d* on its exterior, and constructed with a through passage having open ends *b c*, in combination with the eye B of the handle, and a locking slide or fastening, for holding the socket in position lengthwise, but allowing of its free rotation within the eye B, substantially as specified.

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Witnesses:

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