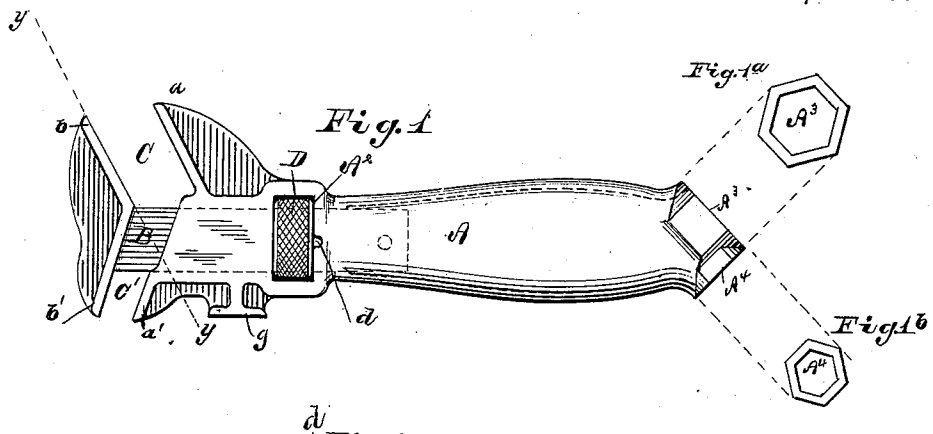
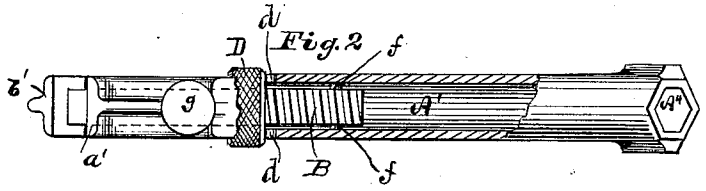
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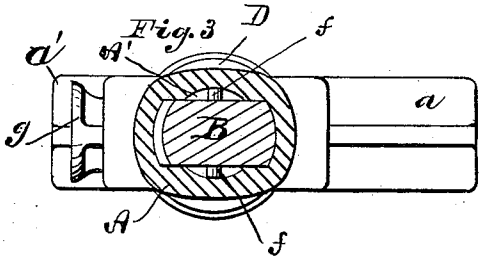
J. D. OTSTOT.

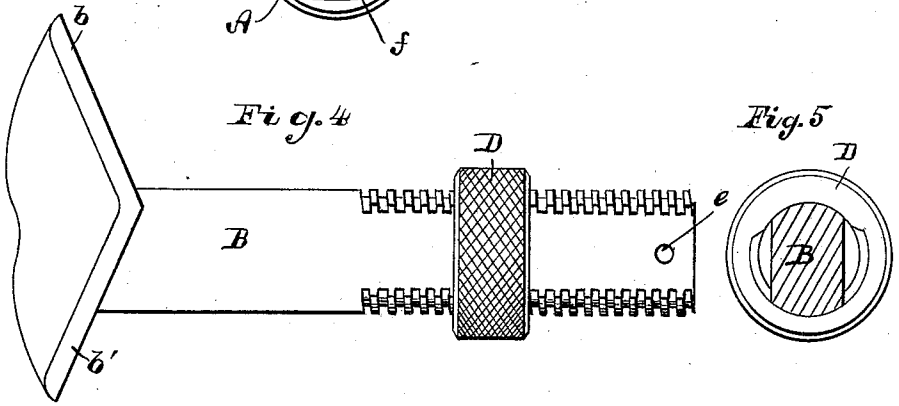
WRENCH.

No. 334,085. Patented Jan. 12, 1886.









Attest

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UNITED STATES PATENT OFFICE.

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WRENCH.

SPECIFICATION forming part of Letters Patent No. 334,085, dated January 12, 1886.

Application filed January 8, 1885. Serial No. 152,278. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. OTSTOT, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

The object of my invention is to provide a simple and inexpensive adjustable wrench adapted for general use; and my invention consists in the combinations and constructions hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side view of a wrench embodying my invention. Figs. 1^a and 1^b will be referred to hereinafter. Fig. 2 is a back view of the same, shown partly in section. Fig. 3 is an enlarged transverse sectional view taken on the line *x x* in Fig. 1. Figs. 4 and 5 are side and end views, respectively, of the movable head and bar with the adjusting-nut thereon.

Like parts are indicated by similar letters of reference throughout the several views.

In the said drawings, A represents the handle of the wrench, which is provided at the front end with projections or heads *a a'*. This handle A is constructed with a longitudinal opening or chamber, A', extending throughout its entire length, said opening being adapted at its forward end to receive the rectangular bar B. This bar B fits snugly in the opening A', and is adapted to move longitudinally therein. The bar B is provided at its outer end with projections *b b'*, on opposite sides thereof, corresponding with the projections *a a'* on the handle A, and adapted to form therewith the jaws C and C' of the wrench. The handle A is provided near its forward end with a transverse opening, A^2, which extends entirely through said handle and joins the longitudinal opening A' at right angles thereto. The rectangular bar B is turned off at its inner end for a portion of its length, is screw-threaded, and adapted to receive thereon an adjusting-nut, D, which is tapped out to correspond to the threads on the bar B. This adjusting-nut D is adapted to fit longitudinally in the transverse opening A^2 of the handle A and engage the screw-threaded portion of the bar B. It will be seen, therefore, that as the adjusting-nut D is revolved in either direction the bar B will be moved longitudinally through the handle A, and thus vary the opening of the jaws C and C'. The longitudinal opening A', which extends through the handle A, is at the rear end of said handle branched in two divisions, A^3 A^4, which extend outwardly through the handle, preferably at an angle of about forty-five degrees. These openings are formed of a hexagonal or other desirable shape, and adapted to form box or socket wrenches, as shown in Figs. 1^a and 1^b. These socket-wrenches may be made standard in size and of different diameters, and will add materially to the utility of the wrench for general purposes. The transverse opening A^2, through the handle A, is provided on its face farthest from the jaws C C' with a small vertical slot, *d*, which extends the entire length of the said opening A^2. The bar B is provided near its inner end with a small hole, *e*, adapted to receive a pin, *f*. This pin *f* is made of sufficient length to project above the surface of the bar, but is short enough to enter the opening A' back of the adjusting-nut D. This pin *f* is adapted to act as a stop to prevent the bar B from being moved outward too far by the adjusting-nut. The pin is inserted in the bar B through the slot *d* after the said bar is placed in the handle and engaged by the nut D by bringing the hole *e* in position under the said slot *d*. The jaws C and C', I form at an angle to the bar B, the said jaws being placed so as to form an obtuse angle with each other. The smaller jaw, C', is adapted to be closed tightly together when the bar B is drawn to its limit in the handle A. The said jaw is therefore capable of being adjusted to the smallest possible work. The forward end of the handle A is preferably cut away a little back of the projection *a'*, which forms the inner face of the jaw C' to form a clearance, so that the faces of the jaw C' may always be brought tightly together. The forward end of the handle is also cut off on an angle parallel, or nearly so, with the faces of the jaw C'. The projection *a*, which forms the inner face of the larger jaw, C, is set back a short distance from the end of the handle, so that the said jaw C is partly open when the smaller jaw, C', is entirely closed. I am thus enabled to obtain a considerable opening of the larger jaw, C, with a comparatively small adjustment of the bar B. The smaller jaw will be capable of receiving any work too small for the larger jaw,

so that an adjustment may be secured from nothing up to the full capacity of the wrench.

By the arrangement of the jaws on either side of the handle, and at an angle to each other and to said handle, as shown, the larger jaw, which will be subjected to the severest strains, is so situated that when opened out almost to its limit the projection of its outer face, as indicated by dotted line *y y*, will intersect the end of the handle A. The bar B, which receives the strain, is thus braced by the handle A at or near the point of greatest strain. This construction renders it very strong and capable of standing the severest strains to which it may be subjected without springing.

On one side of the handle A, preferably just back of the projection *a'*, I provide a circular projection, *g*, which projects from the side of said handle, forming a hammer head or face, so that, if desired, the wrench may be used as a hammer.

All the parts of the wrench are preferably made of malleable iron, the metal of the different parts being made thin to secure lightness, and well ribbed to secure strength.

The handle A will be cast in a single piece and cored out its entire length, one core being sufficient to form both the longitudinal opening A' and the transverse opening A^2; also, the slot *d* in said opening A^2, and the socket-wrenches A^3 A^4.

The handle A, it will be seen, completely incases the bar B, and is preferably adapted to form a bearing for said bar on each side of the adjusting-nut D. The bar D is thus well supported against lateral strains, and, being completely incased in the handle, is kept free from dirt and grit.

It is obvious that the wrench may be made of any suitable material and varied in shape and size, as desired. I however prefer the malleable iron for lightness, combined with strength and cheapness of manufacture.

Having thus described my invention, I claim—

The combination, with the handle A, provided at one end on opposite sides with stationary projections *a* and *a'* at an angle to each other, one of which is offset, as described, of a sliding bar, B, adapted to be moved by nut D into and out of said handle and provided with projections *b b'*, which, with the projections *a a'* on the handle A, form jaws of different sizes on opposite sides of the said handle and at an angle to each other, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 5th day of January, A. D. 1885.

JOHN D. OTSTOT.

Witnesses:

CHASE STEWART,

PAUL A. STALEY.