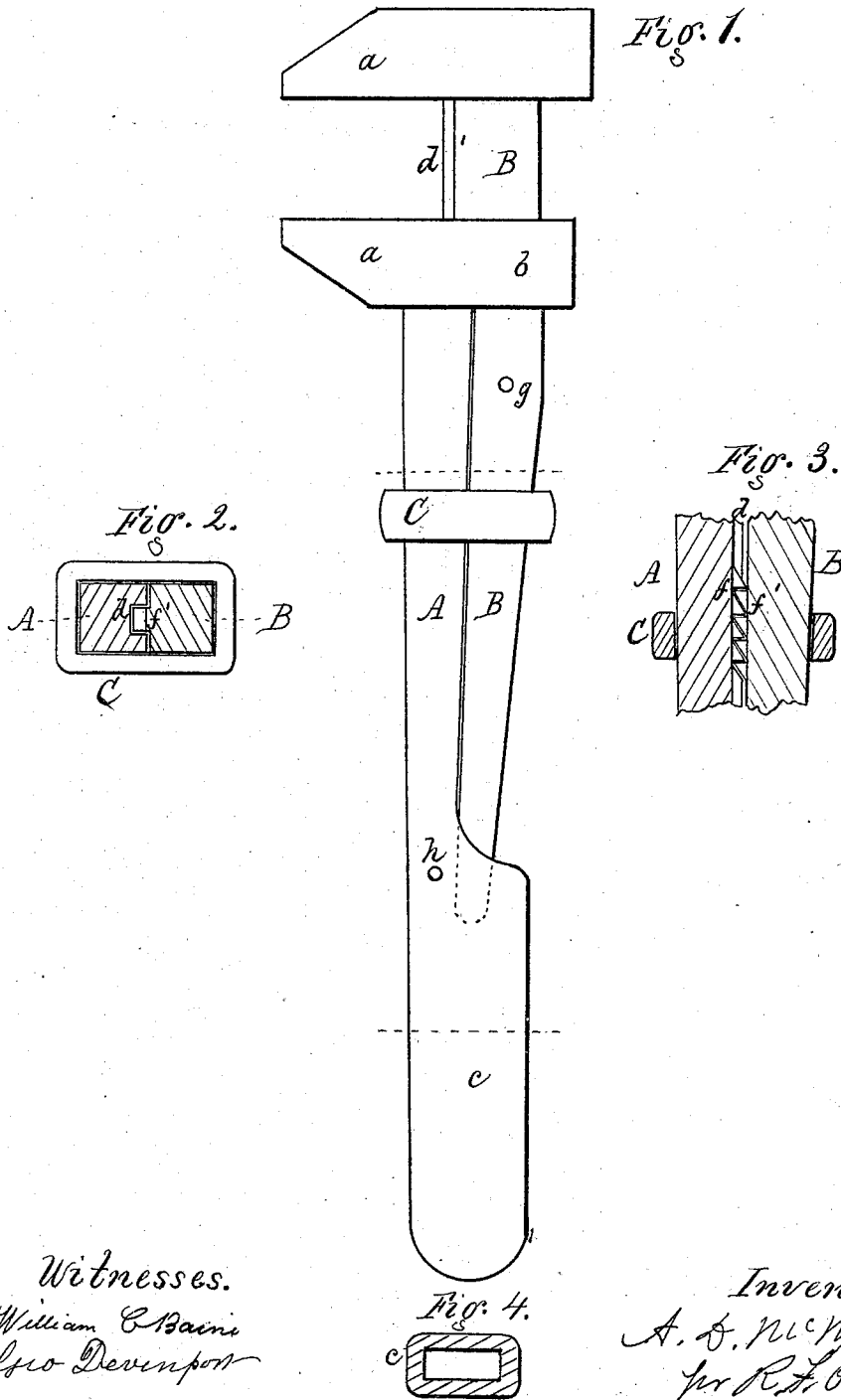


A. D. McMASTER.
Wrenches.

No. 143,367.

Patented September 30, 1873.



Witnesses.
William C. Baine
Geo. Devanport

Inventor.
A. D. McMaster,
per R. F. Osgood,
att'y.

UNITED STATES PATENT OFFICE.

ALONZO D. McMASTER, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-HALF
HIS RIGHT TO ISRAEL SMITH, OF SAME PLACE.

IMPROVEMENT IN WRENCHES.

Specification forming part of Letters Patent No. **143,367**, dated September 30, 1873; application filed
March 6, 1873.

To all whom it may concern:

Be it known that I, ALONZO D. McMASTER, of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful 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.

This invention consists of a wrench constructed of a hollow socketed handle and sliding shank, with intermatching ratchet-teeth and a sliding clamp, as hereinafter described.

In the drawings, Figure 1 is a side view; Fig. 2, a cross-section through the ratchet-teeth; Fig. 3, a horizontal section through the same parts; Fig. 4, a cross-section of the handle-socket.

The wrench is constructed with a handle, A, and sliding shank, B, which parts are provided with the usual jaws *a a*. The jaw of the handle projects sufficiently in the rear to form a socket, *b*, through which the shank passes, as clearly shown in Fig. 1. On the same side of the handle, but at its lower end, is the hollow socket *c*, and into this passes the lower end of the shank, which finds a bearing therein.

This arrangement of the handle-socket in the same line as the socket of the jaw constitutes one of the novel features of my invention. The socket forms a good hand-hold, and shields the end of the shank, and at the same time serves as the bearing to take a part of the strain. It also enables the wrench to be made very cheaply, as the socket can be cast, as well as all the other parts, in malleable iron.

The handle on the inner side is cast with a longitudinal groove, *d*, in which, at a suitable point, are ratchet-teeth *f*, whose outer edges are flush in the face of the handle, or sunken a little below. The shank has upon its corresponding face a rib or feather, *d'*, with ratchet-teeth *f'*, which project in position to engage with the teeth of the handle. The teeth of the handle and of the shank stand in reverse positions to each other, so that they will engage and lock when pressed together; and when so locked the faces of the handle and shank fit closely together and leave a smooth outside. The body of the handle and shank

are made wedging as they lie together, from the socket *c* upward to the lower jaw, and on this wedging portion rests a clamp, C, made in the form of a square or rectangular ring, which may also be of malleable iron. When elevated this ring locks the ratchet-teeth together, and consequently secures the jaws upon the article to be turned; but when lowered, it releases the ratchet-teeth and allows the adjustment of the wrench by moving the shank up or down. A pin, *g*, is inserted through the shank, to prevent its being withdrawn from the socket of the lower jaw, and a corresponding pin, *h*, is inserted in the handle, to prevent the clamp from being withdrawn from the handle.

A great advantage in this arrangement, as before described, is the hollow handle *c* on a line with the socket *b* of the lower jaw. By this means the whole wrench can be cast in malleable iron, and the formation of a socket in a separate part for the purpose is avoided. Another advantage consists in making the body of the handle and shank in tapering form, and employing the sliding clamp C. Another advantage arises from forming a groove in the face of the handle, and sinking the ratchet-teeth flush therein, so that when the projecting teeth of the shank engage therewith the shank and handle lie close together, and present a smooth surface for the sliding of the clamp. Another advantage is, that the socket *c* allows the proper play of the end of the shank therein, so that the teeth *f f'* can be disengaged to adjust the wrench, and at the same time said socket retains the end of the shank, so that it cannot escape, and forms a shield for the same. Another advantage is, that this wrench is self-locking when used in the ordinary way, even without the use of the clamp. In such case the socket *b* of the lower jaw forms the fulcrum, and the jaws cannot get out of place. The clamp is essential to combine the strength of both the handle and the shank, by locking them closely together. It also serves to hold the parts firmly in turning articles where there is not much resistance.

I am aware that the handle of a wrench has been provided with a passage extending entirely through the same, in which passage the shank of the movable jaw is arranged, said jaw

being operated by means of a screw-rod passing through the hollow handle and operated from its lower end; but such is not my invention.

Having thus fully described my invention, what I claim as new is—

The handle A, formed with the socket *c* and groove *d*, and having ratchet-teeth *f*, and supporting the clamping-sleeve C, in combination with the shank B, having the rib *d'* and

ratchet-teeth *f'*, all constructed and arranged to operate substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

A. D. McMASTER.

Witnesses:

R. F. OSGOOD,
DRAPER STOW.