(Model.)

J. McALPIN.

WRENCH.

No. 277,590. Patented May 15, 1883.

Fig. 1.

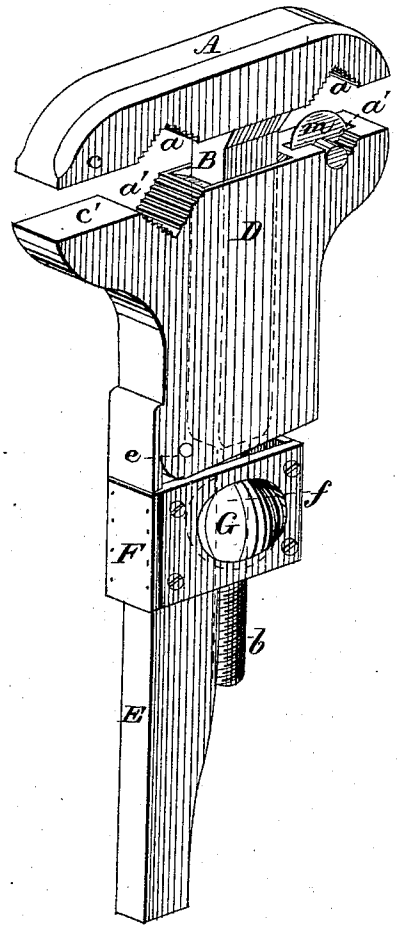
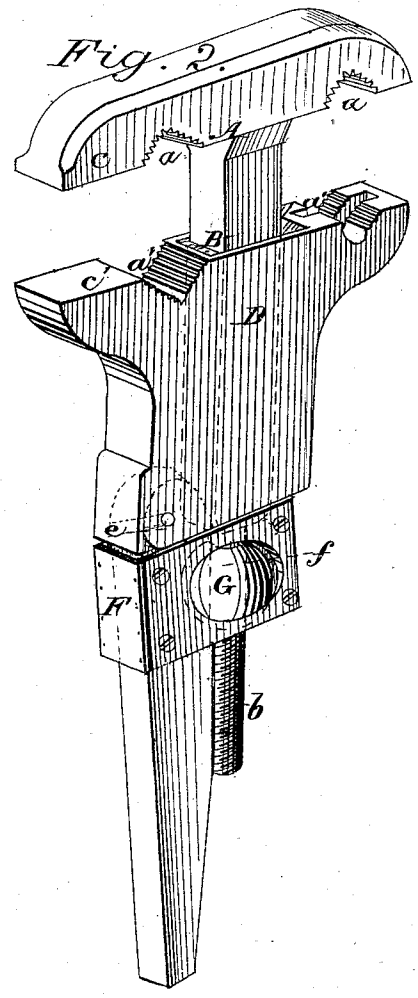


Fig. 2.



Witnesses;
Geo. H. Strong.
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Inventor,
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UNITED STATES PATENT OFFICE.

JOSEPH McALPIN, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO ROBERT G. ADAIR, OF SAME PLACE.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 277,590, dated May 15, 1883.

Application filed February 24, 1883. (Model.)

To all whom it may concern:

Be it known that I, JOSEPH McALPIN, of the city and county of San Francisco, State of California, have invented an Improved Wrench; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a new and useful wrench; and it consists in suitable jaws fitted one upon the other to move together or apart, and in a handle connected with one jaw by a knuckle-joint, and with the screw-shank of the other by a loosely-seated or swiveled ball-nut, whereby said jaws may be adjusted by the nut and their grip tightened by the power applied to the pivoted handle, as will hereinafter fully appear.

The object of my invention is to furnish a wrench having not only the ordinary power of gripping, but one whose grip is increased in proportion to the power applied to operate it to avoid slipping; and, further, to provide a wrench which may be readily used in small space with facility and with great power.

In the drawings, Figure 1 is a perspective view, showing the handle straight. Fig. 2 is a perspective view of same, showing the handle inclined and ready to be drawn back to increase the grip.

Let A represent the outer jaw, having a shank, B, terminating in a screw, *b*. The jaw A is here shown in the shape of a cross-head, having corrugated recesses, *a*, forming one-half the bearing-surface by which the pipe is gripped. One side is continued straight, forming the ordinary jaw, *c*, of a monkey-wrench.

D represents the inner jaw, having corresponding recesses, *a'*, and straight jaw *c'*. The body or stock of the jaw D is provided with a socket, through which the shank B of the jaw A loosely passes.

E is the handle of the wrench. Its end extends into the end of the body of jaw D, and is pivoted therein, forming a knuckle-joint at *e*. The handle has a wide head, F. In this is a socket, *f*, forming a bearing or seat for a ball-nut, G, which lies therein. The screw *b* passes down into the head F and through the nut G. The edge of the body or stock of jaw D next to the head F is inclined, so that when the two jaws are straight and the screw *b* and handle E are parallel, as shown in Fig. 1, the edges of the head F and jaw D bear against each other only at one side.

In the operation of the wrench the turning of the ball-nut G draws the jaw A in toward the jaw D until the pipe or nut to be operated upon is gently gripped. The continued turning of the nut G then causes the head F to so incline as to bring its edge against the adjacent edge of the jaw D its entire length, as shown in Fig. 2. It is allowed to do this because of the handle forming a pivot or knuckle-joint at *e*, and because of the ball-nut being able to turn in its seat. The pipe or nut is now firmly gripped by the jaws, and when the handle is forced back to operate the wrench this grip is increased, because one edge of the head F, in being drawn back, bears upon the jaw D, while its ball-nut pulls back upon the screw *b* of jaw A. This equalizes the strain, and at the same time forces and draws the jaws with greater power upon the pipe or nut.

The more power the operator employs in moving his wrench the greater its grip, so that when he finds a pipe or nut hard to start he can be assured that in exerting his force his wrench will not slip, but will grip with greater power the more force he employs. But this is not its only advantage. It can be used in place of a ratchet-wrench to work in small space. Having taken hold of the pipe or nut and drawn back upon the handle to increase the grip and turn the pipe or nut to the limit of the space afforded in which to operate, the operator, moving the wrench forward, throws the handle forward and separates the jaws by such movement sufficiently to allow them to slip or fleet to take a new position and hold, when the device is again operated. Thus in addition to the force of the grip which will result from operating the ball-nut, as in an ordinary screw-wrench, I obtain the further force resulting from the knuckle-joint, which said force is only limited by the power of the operator.

The sockets *a a'* are for pipes, and one may be made larger than the other to accommodate different sizes of pipes. Either side of the jaws A D operates in similar manner. In one of the sockets *a a'*, I show a pipe-cutter, *m*, consisting of an edged disk upon a shaft laid or mounted across the socket, Fig. 1. The

straight jaws *c c'* adapt the implement for use as an ordinary monkey-wrench, as well as a pipe-wrench.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a wrench, meeting jaws, in combination with a handle connected with one by a knuckle-joint, and having a swiveled nut engaging with the screw of the other jaw to adjust and draw said jaw to tighten the grip of the wrench, substantially as herein described.

2. In a wrench, the jaws A D, fitted together, as shown, in combination with the handle E, pivoted to the jaw D by a knuckle-joint, *e*, and connected with the screw *b* of the jaw A by a swiveled ball-nut, G, whereby said jaws may be adjusted by the nut and screw and their grip tightened by the handle, substantially as herein described.

3. In a wrench, the jaw A, having shank B and screw *b*, and the jaw D, fitted loosely upon shank B, in combination with the handle E, pivoted or hinged to jaw D, forming a knuckle-joint at *e*, and having a wide head, F, impinging upon the edge of said jaw, and a loosely-seated ball-nut, G, engaging with screw *b*, all arranged and operating substantially as and for the purpose herein described.

4. In a wrench, the jaws A D, having pipe-sockets *a a'* and straight jaws *c c'*, said jaws being fitted together by means of shank B and screw *b*, as shown, in combination with the handle E, having a wide head, F, pivoted to jaw D, and forming a knuckle-joint, *e*, and the loosely-seated or swiveled ball-nut G in said head, and through which the screw *b* passes, substantially as and for the purpose herein described.

In witness whereof I hereunto set my hand.

JOSEPH McALPIN.

Witnesses:

WM. F. BOOTH,

J. H. BLOOD.