

E. BIDDLE.  
Hydraulic Jacks.

No. 154,366.

Patented Aug. 25, 1874.

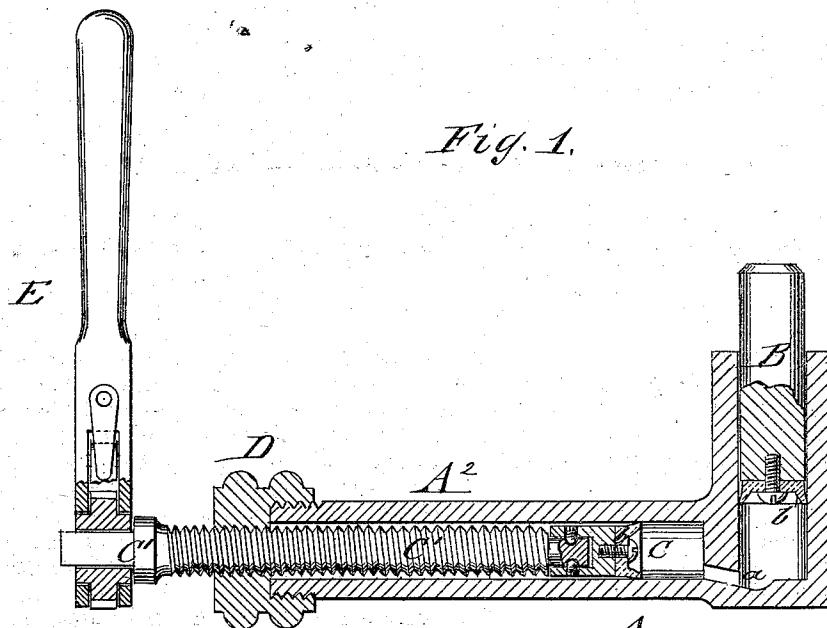


Fig. 1.

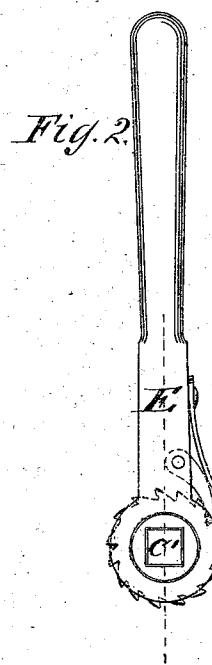


Fig. 2.

WITNESSES:

E. Wolff  
W. B. Quirk

INVENTOR:

E. Biddle

BY

W. M. Mull

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

EDWARD BIDDLE, OF CARLIN, NEVADA.

## IMPROVEMENT IN HYDRAULIC JACKS.

Specification forming part of Letters Patent No. 154,366, dated August 25, 1874; application filed July 25, 1874.

*To all whom it may concern:*

Be it known that I, EDWARD BIDDLE, of Carlin, in the county of Elko and State of Nevada, have invented a new and Improved Hydraulic Jack, of which the following is a specification:

In the accompanying drawing, Figure represents a vertical longitudinal section of my improved hydraulic jack; and Fig. 2, an end view, showing application of ratchet-wrench thereto.

Similar letters of reference indicate corresponding parts.

The object of my invention is to furnish a convenient implement by which cross-heads may be forced out of piston-rods, bolts out of engine-frames and cylinders, and similar work be done where only a small space is available for the application of the tool or implement. The invention consists of a hydraulic jack, constructed of a piston or ram with packed end sliding in a tube, being forced forward by the action of the liquid, which is compressed by a tightly-packed piston fed forward by means of its screw-bolt and a ratchet-wrench in a tube under right angles to the ram-tube, and connected therewith.

In the drawing, A represents the guide-tube of my hydraulic tool or jack, which is made of a shorter tube, A<sup>1</sup>, for the ram or main piston B, and a longer tube, A<sup>2</sup>, under right angles thereto, for the screw-piston C. The outer base part of the ram-tube A<sup>1</sup> is of square shape, for being seated steadily below the part to be acted upon. A small channel, a, connects both tubes and admits the liquid to

enter from tube A<sup>2</sup> into tube A<sup>1</sup>, and act from below on the square or concave lower end of main piston B, which is provided with a packing, b, flanged at the circumference, for expanding and closing tightly the more the pressure is increased. The piston C is provided with a similarly-constructed packing, and applied by a universal or similar joint to its screw-bolt C', by which it is fed in forward direction. It turns in a screw-nut, D, which is firmly screwed over the end of the tube A<sup>2</sup>, being operated by means of a ratchet-wrench, E, placed on the square end of the screw-bolt C'. The liquid in the longer tube A<sup>2</sup> is forced by the advancing screw-piston into the ram-tube and against the lower end of the ram, so as to press the same in outward direction and raise thereby any object to which the piston is applied. It forms an instrument of great usefulness in cases in which there is not space enough for the common tools, it being readily and quickly used for various purposes in the mechanical arts.

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

The improved hydraulic tool or jack, constructed of rectangular guide-tube A, ram B, piston C, with feed-screw C' jointed thereto, and ratchet-wrench E, all being suitably packed and operated substantially as specified.

EDWARD BIDDLE.

Witnesses:

ROBERT BLACK,  
NELSON BELANGER.