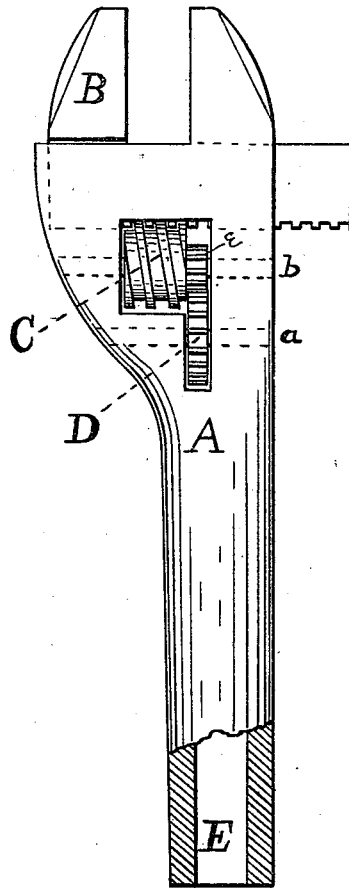


H. RICHARDS.
WRENCH.

No. 186,954.

Patented Feb. 6, 1877.



Witnesses:
F. H. Richards.
Jacob Ritz.

Inventor.
Henry Richards

UNITED STATES PATENT OFFICE.

HENRY RICHARDS, OF NEW BRITAIN, CONNECTICUT.

IMPROVEMENT IN WRENCHES.

Specification forming part of Letters Patent No. **186,954**, dated February 6, 1877; application filed July 17, 1875.

To all whom it may concern:

Be it known that I, HENRY RICHARDS, of New Britain, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Wrenches, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which is shown a wrench substantially of the form of one shown in Letters Patent No. 17,531, granted to E. J. Worcester, June 9, 1857, together with the improvements thereon, in which this my present invention consists.

A is the handle of the wrench, usually made hollow to lighten the same, one end being square to serve as a socket-wrench, E. Upon the other end of the handle, which is widened into a head of the general form shown, is formed a jaw in one piece therewith, and in a suitable passage-way or channel is a jaw, B, sliding freely therein toward and away from said fixed jaw. In the lower side of said jaw B is a series of notches or teeth, meshing into the thread of a worm, C, which revolves upon pin *b*, and within a mortise through, or recess in, the head of the wrench.

I have in the preceding described that portion only of the wrench shown in the accompanying drawing that is old, and which I disclaim as constituting any part of my invention.

In practice it is often desirable to grasp the wrench, in using it, in the hand in such man-

ner that the thumb may be upon the worm C to operate the same; but, under many circumstances, this is found impossible for want of room, or other cause, as well as the large size of some wrenches. The object of my present invention is to obviate this difficulty; which I do by the employment of one or more thumb-wheels, D, geared with worm C, arranged, as shown, in the mortise or slot lengthwise of the handle. By this means the workman is enabled to grasp the wrench at a greater distance from the jaws, and still operate the jaw B with this thumb, than without this improvement; and he may increase this distance at pleasure by making a longer mortise or slot, and arranging a number of gears meshing with each other therein, the number to be used depending somewhat upon their size.

I prefer the thumb-wheel D should be a gear; but a friction-wheel, X, can be used instead.

Having thus described my invention, I claim—

In a wrench where a movable jaw moves at right angles to the handle, the combination of a thumb-wheel, D, externally geared into a pinion, E, at the end of the worm C, the pinion being placed in a recess in a slot running lengthwise of the handle.

HENRY RICHARDS.

Witnesses:

F. H. RICHARDS,
JACOB RITZ.