W. DICKS.

WRENCH.

No. 186,925. Patented Feb. 6, 1877.

Fig 1.

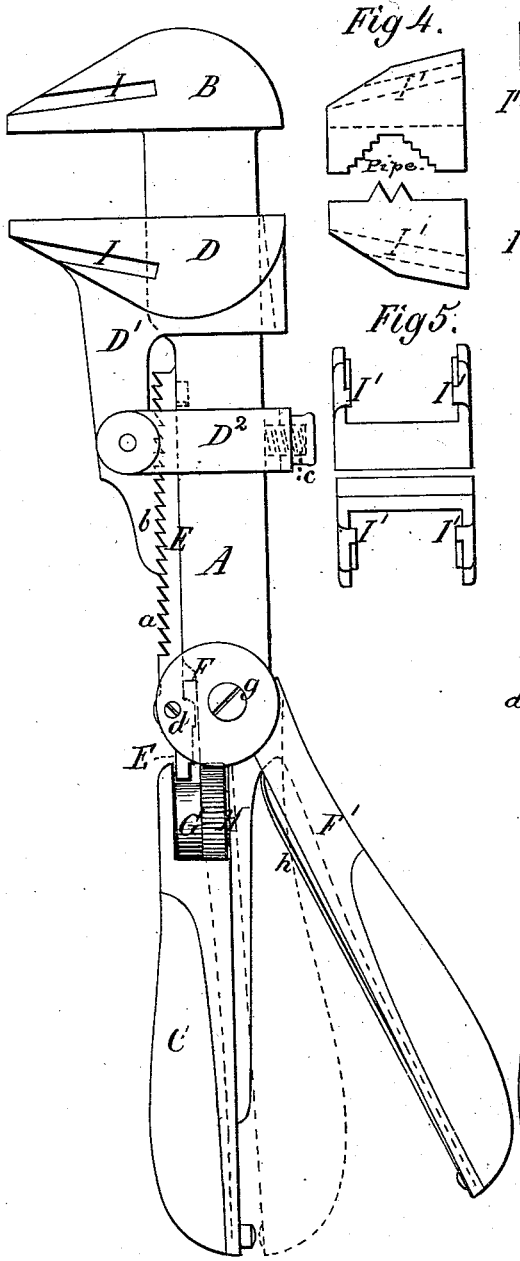


Fig 2.

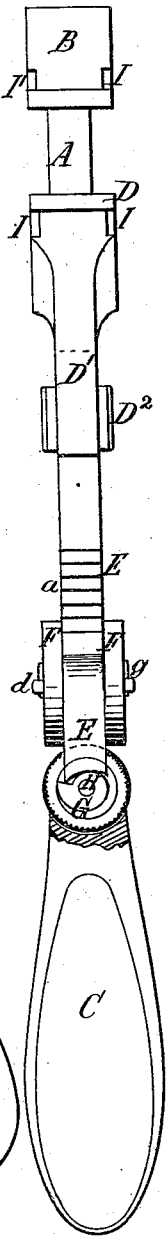


Fig 3.

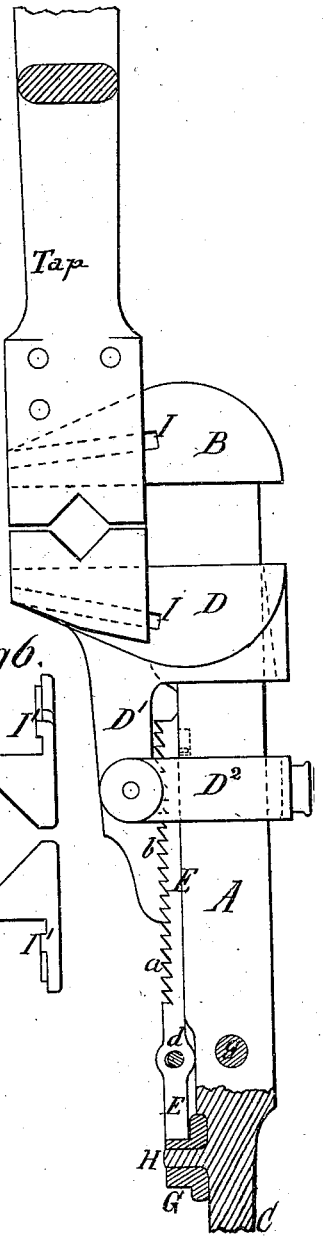
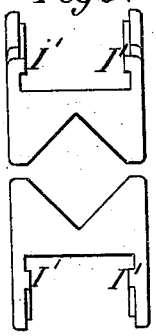


Fig 4.

Fig 5.

Fig 6.



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UNITED STATES PATENT OFFICE.

WILLIAM DICKS, OF CLIFTON, ONTARIO, CANADA.

IMPROVEMENT IN WRENCHES.

Specification forming part of Letters Patent No. **186,925**, dated February 6, 1877; application filed November 25, 1876.

To all whom it may concern:

Be it known that I, WILLIAM DICKS, of Clifton, in the county of Welland, Province of Ontario, and Dominion of Canada, have invented a new and useful Improvement in Adjustable Grasp-Wrenches; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of my improved wrench. Fig. 2 is a front-edge view of the same. Figs. 3, 4, 5, and 6 are views illustrating different attachments for the improved wrench, Fig. 3 showing a portion of the wrench with one of the attachments applied to it.

The nature of my invention consists, first, in a longitudinally-sliding bar with ratchet-teeth on its face for gearing with teeth of the movable jaw of the wrench, and operated directly by a lever-arm on one part of the handle of the wrench, whereby, after the movable jaw has been adjusted with respect to the stationary jaw to a position proper for taking hold of a given-sized nut, the said movable jaw, in conjunction with the stationary jaw, is made to clasp the nut with a firm bite by the action of the lever-arm of the closing part of the handle upon the sliding toothed bar.

It consists, second, in a retaining-stop for holding the movable jaw in any desired position, and thereby relieving it from resistance, and keeping the handle in a fixed position during the use of the wrench for other than ordinary work.

It consists, third, in providing the jaws of the wrench, on both their sides, with grooves which recede or diverge from the biting-faces of the jaws, for the purpose of receiving corresponding tongues formed on various attachments, which it may be found useful to use as auxiliary to the wrench proper. By having the grooves oblique, resistance offered to the attachments will not as readily displace the attachments from the grooves as when the grooves are parallel with the face of the jaws, because the oblique meeting surfaces are opposed to the straight pull upon the biting-faces of the attachments of the wrench-jaws.

It consists, fourth, in the combination of the toothed bar, the movable and stationary jaws, and lever-handle, as hereinafter described.

In the accompanying drawings, A is the shank or body of the wrench, made solid with the stationary jaw B, and terminated in a half-handle, C, as shown. D is the movable jaw of the wrench, formed with an elongation or stay, D^1, and with a loop or strap, D^2, by which it is confined loosely upon the shank A. On the front of the shank A a toothed slide, E, with ratchet-teeth *a* on its front, is fitted loosely, and on the rear of the stay corresponding ratchet-teeth *b* are provided. The two sets of teeth match or interlock; and in order to have facilities for ungearing the movable jaw from the toothed slide E, and adjusting the movable jaw toward and from the stationary jaw, the strap D^2 has an opening through it wider than the toothed slide E and shank A, and a spiral spring, *c*, is interposed between the back end of the strap D and the back of the shank A. By means of this construction the stay of the movable jaw can be pressed away from the toothed slide E of the shank by applying the hand to the back of the strap, and when the stay is moved away, as stated, the movable jaw can be moved backward or forward free from the toothed slide. Beyond the teeth *a* the slide E is continued along the body of the wrench, and is enlarged, so as to have strength to receive a pivot, *d*, by which it is pivoted to a lever, F, of the movable half F′ of the wrench-handle. From the enlargement the slide is further continued a short distance, as represented. At the termination of the slide, a convolute-shaped cam, G, with a milled periphery, so as to be revolved by hand, is placed upon a pivot, H, said pivot being formed on the shank A of the wrench. This cam fits a recess in the end of the slide, and by turning it more or less after the movable half of the handle is closed, as occasion requires, the slide and the movable jaw will be retained in a fixed position, and as the handle cannot open until the slide is free to move, it will be held in a fixed posi-

tion. That portion of the handle F which forms the lever is constructed of two disk-shaped pieces of metal, connected at the back by a strap, which is a part of the said portion of the handle. Through these disks the fulcrum-pin *g* of the part F F′ of the handle and the coupling-pin *d* are passed, the pin *g* extending through the body or shank of the wrench, and the pin *d* through the slide, as represented.

In order to have the part F F′ of the handle open when released, a spring, *h*, is placed between the same and the half-handle formed on the shank.

I I are oblique grooves formed on opposite sides of the stationary and movable jaws. These grooves are placed in such position as to recede from the biting-faces of the jaws, as shown, in order that the tendency of the resistance offered to the attachments while the wrench is being used shall be to bind the attachments firmly to the jaws, this being due to the pull on a straight line finally coming upon the oblique connecting tongues and grooves by which the attachments are connected to the wrench-jaws. By means of these grooves, attachments which will answer as a pipe-wrench, (see Figs. 4 and 5,) or as an axle-nut wrench, (see Fig. 6,) or a tap-wrench, (see Fig. 3,) may readily be applied to the wrench proper without any other holding device, such as screws or pins. The attachments themselves will have tongues I I′, corresponding to the grooves I I, and these tongues will slip into the grooves.

The operation of the wrench is as follows: The movable jaw D is first adjusted to the approximate size of the object to be held by the toothed stay D^1 and slide E, leaving the opening wider than the object; then, by grasping and closing the lever half of the handle to the stationary half C thereof, the slide E is forced along the face of the body A of the wrench, thus causing the intervening object to be powerfully griped by the closing jaws under the most common or ordinary use of the wrench, which jaws, upon the removal of the gripe upon the handle, immediately open and relieve the object, thereby leaving the wrench free to be expeditiously changed on the square or diameter of said intervening object. Should it, however, be desirable to retain the hold of the object when not clasping the handle, or when in use as a clamp, &c., this can be done by revolving the convolute-shaped cam G with the fingers until its diameter touches the base of the slide E. Thus adjusted, the slide, with the resistance upon it, bears against the cam, and, at the same time, the lever-handle is relieved of its load, and the wrench is permitted to be used as a swing or fly-lever wrench, or a clamp for obvious uses.

The two portions of the handle may be made of metal and filled with wood, composition, or horn, as desired, or may be of metal entirely. The attachments will be applied as shown, but modified as to shape and adaptability of purpose.

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

1. A longitudinally-sliding toothed bar, E, geared to the movable jaw, so as to move said jaw when the handle is closed, said bar being operated directly by one part of the handle, substantially as described.

2. The retaining-stop G, applied in rear of the sliding toothed bar E, and serving for holding the movable jaw and handle firmly in their closed positions while using the wrench, substantially as and for the purpose set forth.

3. The oblique receding grooves I in the sides of the jaws proper of the wrench, to receive corresponding tongues of attachments, substantially as described.

4. The slide E, applied in combination with the laterally and longitudinally adjustable jaw D, stationary jaw B, and lever-handle F F′, so that the movable jaw advances when the handle is being closed, substantially as described.

Witness my hand in the matter of my application for a patent for a grasp-wrench this 21st day of November, 1876.

WILLIAM DICKS.

Witnesses:

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A. G. HEYLMAN.