No. 646,077. Patented Mar. 27, 1900.

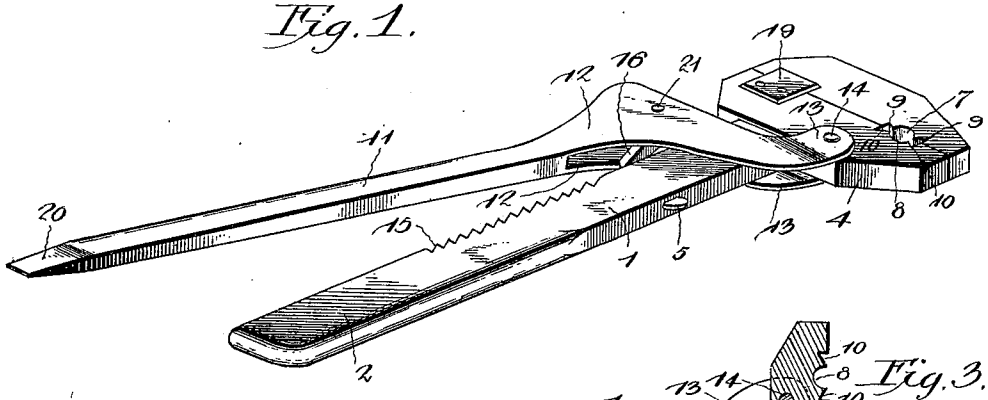
M. D. MILLER.

WRENCH.

(Application filed June 16, 1899.)

(No Model.)

Fig. 1.



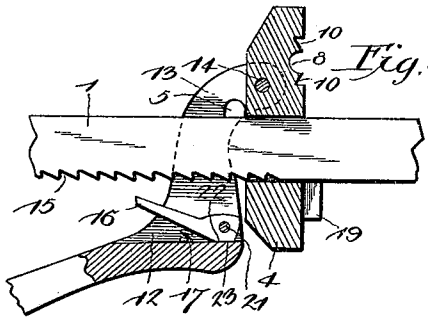
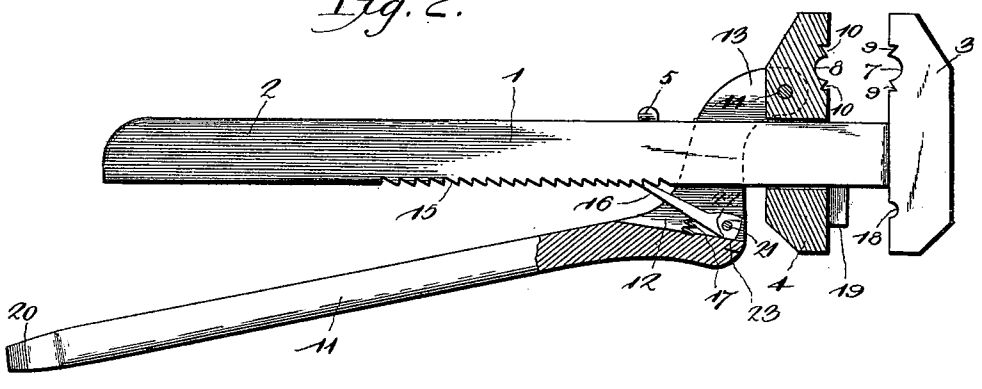


Fig. 3.

Fig. 2.



Witnesses
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By his Attorney
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UNITED STATES PATENT OFFICE.

MARTIN D. MILLER, OF KANSAS CITY, MISSOURI, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO EDGAR S. MILLER, MAURICE ROSENTHAL, AND FREDERICK R. STONE, OF OMAHA, NEBRASKA.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 646,077, dated March 27, 1900.

Application filed June 16, 1899. Serial No. 720,831. (No model.)

To all whom it may concern:

Be it known that I, MARTIN D. MILLER, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a new and useful Wrench, of which the following is a specification.

The invention relates to improvements in wrenches.

One object of the present invention is to improve the construction of wrenches and to provide a simple and comparatively-inexpensive one capable of operating on nuts, pipes, rods, and the like and adapted to effectively grip a round object.

A further object of the invention is to provide a wrench which when operating on pipes or rods will be adapted by a slight relaxation of the grip on the handle to release a pipe or rod to permit it to be moved back for another stroke without carrying the pipe or rod with it.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a perspective view of a wrench constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view. Fig. 3 is a detail sectional view, the pawl or dog being out of engagement with the shank.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a shank having an inner handle portion 2 and provided at its outer end with a stationary jaw 3, which coöperates with a sliding jaw 4, provided with an opening to receive the shank and mounted on the same between the stationary jaw and the stop 5. The front portions of the jaws 3 and 4 are provided at their engaging faces with curved recesses 7 and 8 and with V-shaped notches 9 and 10, located at opposite ends of the curved recesses and intersecting with and meeting the end walls of the recesses in sharp points, forming teeth which are in alinement with the engaging faces of their respective jaws, thereby being adapted to engage a pipe, rod, or similar round object and at the same time not interfere with engaging a nut or other object having flat faces.

The sliding jaw is operated by a lever 11, having its inner end bifurcated, forming a pair of transverse arms 12, which are substantially L-shaped and which have their outer portions 13 disposed substantially parallel with the shank 1 when the lever is contiguous to the same. The arms 12, which are located at opposite sides of the shank 1, are pivoted at their outer ends to opposite sides of the engaging portion of the sliding jaw 4 by a transverse pin 14 or other suitable flexible connection, and the pivot is located directly beneath the engaging portion of the movable jaw, whereby the pressure is applied directly opposite the object engaged by the wrench, enabling the latter to grip an object more firmly by such direct application of the power.

The rear edge of the shank 1 is provided with a series of teeth 15, which are engaged during the operation of the wrench by a spring-actuated pawl or dog 16, pivoted within the space between the arms 12. The pawl or dog 16, as shown in Fig. 2 of the accompanying drawings, is normally arranged at an angle to the shank and is engaged by a spring 17, interposed between it and the lever. When the lever is arranged at an angle to the shank, as shown in Fig. 2, it is adapted to be compressed against the shank, and the movement of the lever toward the shank forces the sliding jaw in the direction of the stationary jaw, as the pawl or dog locks the lever against any inward movement on the shank. The arms of the lever form practically a bell-crank lever and enable great pressure to be exerted, so that a pipe may be firmly gripped. In order to limit the swing of the engaging pawl from the lever 11, so that the latter when swung outward a sufficient distance may quickly disengage the pawl from the teeth of the shank 1, the pivot 21 of the pawl is located a short distance from the upper or outer end thereof, and the said pawl is provided at its outer or pivoted end with a face 22, located beyond

the pivot and arranged to engage the adjacent face 23 of the lever. The face 23 of the lever is formed by the wall at the inner end of the bifurcation, and by providing a stop for limiting the swing of the pawl or dog incident to the action of the spring the said pawl or dog may be instantly disengaged from the shank, thereby enabling the wrench to be quickly adjusted.

In applying the wrench to a nut the lever and the shank are brought together, and the sliding jaw is then moved up against the nut. The parts are then in position for screwing a nut on or off a bolt or any other threaded portion. When operating on a pipe or rod, the jaws of the wrench are brought into engagement with the same when the lever is at an angle to the shank, whereby when the lever and the shank are brought together the pipe or rod will be firmly gripped. By slightly relaxing the grasp on the lever and the shank the jaws will release the object sufficiently to enable the wrench to move backward without rotating the pipe or rod.

The stationary and movable jaws extend rearward from the shank, and the stationary jaw is provided with a wire-receiving notch 18, and the movable jaw carries a blade 19, adapted to cut a wire when the jaws are brought together. The handle portion of the lever is rounded at the outer edge, and it may be provided with a screw-driver point 20.

The invention has the following advantages: The wrench, which is simple and comparatively inexpensive in construction, possesses great strength and durability and is capable of operating on either a rod or nut, and the teeth for engaging a round object do not interfere with the nut-engaging faces.

Changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

What I claim is—

1. A wrench provided with jaws having curved recesses in their working faces and provided at opposite sides of the recesses with V-shaped notches, the outer walls of which are perpendicular and the inner walls oblique with respect to the working faces of the jaws, the inner oblique walls of the notches intersecting with and meeting the end walls of the recesses and forming on each jaw a pair of acute-angled teeth which are reversely inclined to each other, substantially as described.

2. A wrench, comprising a shank provided at its rear edge with teeth, a stationary jaw, a sliding jaw mounted on the shank, a lever having its outer portion bifurcated to form two arms, said arms extending entirely across the shank and pivotally connected with the sliding jaw in line with the engaging portions of the jaws, and a spring-actuated pawl or dog pivotally mounted within the bifurcation of the lever and having its pivot end arranged to engage the adjacent portion of the lever to form a stop, whereby the movement of the lever by the spring is limited, substantially as and for the purpose described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MARTIN D. MILLER.

Witnesses:
LAURENCE EUGENE LYONS,
EDGAR S. MILLER.