(No Model.)

T. BIRD.

PIPE WRENCH.

No. 459,559. Patented Sept. 15, 1891.

Fig. 2.

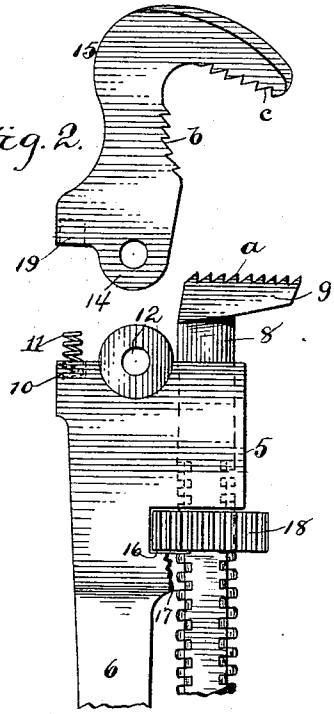


Fig. 1.

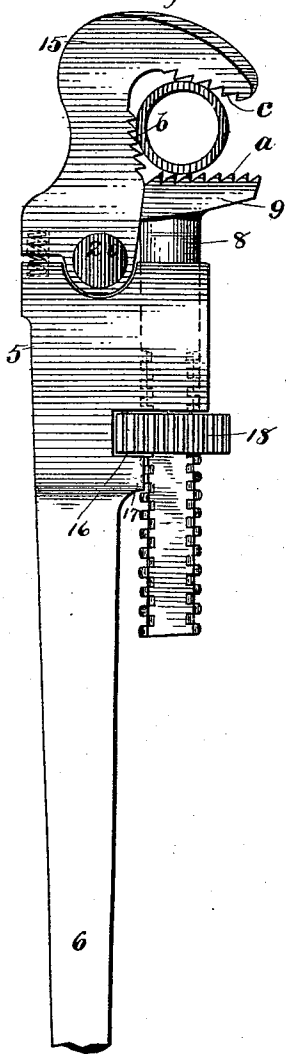


Fig. 3.

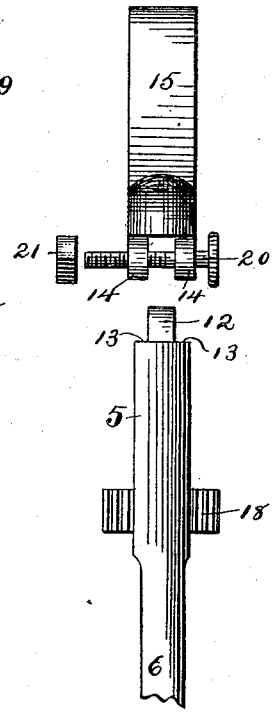
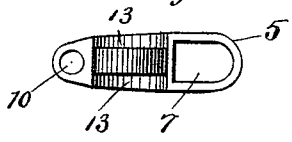


Fig. 4.



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UNITED STATES PATENT OFFICE.

THOMAS BIRD, OF BROOKLYN, NEW YORK.

PIPE-WRENCH.

SPECIFICATION forming part of Letters Patent No. 459,559, dated September 15, 1891.

Application filed September 18, 1889. Serial No. 324,363. (No model.)

To all whom it may concern:

Be it known that I, THOMAS BIRD, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Pipe-Wrenches, of which the following is a specification.

My invention relates to pipe-wrenches; and it has for its object the devising of a wrench of simple construction having its several parts so made and so assembled relatively to one another as to produce a tool of great strength and efficiency.

The invention consists in the peculiar construction and arrangements of parts, as hereinafter described, and defined by the claim.

In order that others interested in this class of devices may understand my improvements, I will now explain the same in connection with the accompanying drawings, which form a part of this specification, and wherein like features are indicated by like figures of reference in the several views, and wherein—

Figure 1 is a side elevation of a tool made in accordance with my invention, showing a pipe in section between the gripping-jaws; Fig. 2, a side elevation of the wrench, showing the pivoted jaw removed; Fig. 3, a back edge view of the tool with the pivoted jaw removed; and Fig. 4, a plan of the top of the wrench-socket, showing the hole for the spring of the pivoted jaw and the opening through the socket for receiving the sliding jaw.

The several parts of my wrench, which are of cast-steel, are drop-forged and not cast as is usual in the construction of this class of appliances. This mode of making the tool renders the same much stronger than it would otherwise be.

Referring to the drawings, 5 indicates the socket of the wrench, having formed integral therewith the handle 6. This socket, a top view of which is shown in Fig. 4, is provided at the front with a longitudinal opening 7, adapted to receive the stem 8 of the sliding jaw 9, as seen in the drawings, and at the back there is formed a hole 10, furnishing a seat for the stiff spiral spring 11. Between the opening 7 and hole 10 the top of the socket is formed with a pivoting-eye 12, at the base of which, on the sides thereof, are semicircular recesses 13. The lugs 14 of the pivoted jaw 15 are seated and operate in the recesses 13, as shown in Fig. 1. At the lower end of socket 5 it is provided in its narrow portion with depression 16, forming a lug 17, against which the milled nut 18 (which enters said depression) is supported in order that it may properly co-operate with the screw-threaded portion of the stem 8 and propel the sliding jaw 9. The front of lug 17 is channeled longitudinally to receive the back edge of the screw-threaded stem 8, and thus serve as a guide therefor. That part of the stem 8 of the sliding jaw 9 which may be screwed out of the opening 7 is smooth and not screw-threaded, the screw-threads being on the lower portion only of said stem. This stem is thus rendered stronger than it would be if its upper part were screw-threaded. The sliding jaw 9 is provided with serrations *a*, as shown, the serrated surface being in a horizontal plane. The pivoted jaw 15 is, as before stated, provided at its lower end with lugs 14, which are perforated laterally, and which embrace the pivoting-eye 12, while their lower semicircular edges are seated in the correspondingly-formed recesses 13. At the rear of lugs 14 the jaw 15 is formed with a flat seating-surface, which is parallel with the top surface of the socket 5, and it is also provided with a hole 19, which receives the upper end of spiral spring 11, its lower end being seated in the hole 10 at the top of the socket 5, as already explained. The object of the spring 11 at the rear of the pivoted jaw 15 and which keeps said jaw thrown somewhat forward, is to permit it to readily release its grip on the pipe when taking a fresh grip, which it does by its function of vibrating slightly on the pivot 20 against the compression of said spring. The pivot 20 is a screw-threaded bolt passing through the perforations in the lugs 14 and pivoting-eye 12 and held against displacement by nut 21, as seen in the drawings. When the wrench is used on nuts, the flat surface of the pivoted jaw 15 in rear of the lugs 14, or, at least, its edge, is adapted to seat upon the corresponding flat surface in rear of the pivoting-eye 12 at the top of the socket 5, and thus take the strain off pivot 20. The pivoted jaw 15 is

preferably of the form shown, and on its inner surface it is provided with two sets of serrations *b c*, those marked *b* being substantially vertical, while those marked *c* are substantially horizontal, or nearly parallel to the serrations *a* of the sliding jaw 9. The object of these three serrated surfaces, arranged as stated, is to enable the pipe to be gripped in such manner that it may be held more firmly than it could be if there were only two gripping-surfaces, as the gripping compression is distributed about equally around the pipe, which thus effectually prevents slipping. The inner surface of the pivoted jaw 15 is so shaped that when the several parts are assembled the back surface of the sliding jaw 9 comes in contact therewith. The sliding jaw 9 is thus strengthened by being supported against the pivoted jaw when the tool is in use on pipes.

The socket 5 and handle 6 being made integral renders the tool stronger than it would be if these parts were independently made and held together by straps or otherwise, and the location of the socket at the top of the handle instead of at one side greatly facilitates the use of the tool.

The forms of the several parts of the tool are such that they may easily be made of cast-steel by a drop-forge, and as there are no springs entering into the construction (excepting the above-described spring 11, which is very fully protected by jaw 15 and by the part of the wrench containing the socket) the tool is capable of hard usage without liability of being injured.

In the use of the appliance it will be observed that the stem 8 of the sliding jaw 9 is moved into socket 5 to enlarge the gripping opening and moved out of said socket to contract said opening. By this arrangement the jaw is strongest when operating the largest-sized pipes and is weakest when the pipe operated on is smallest, thus providing strength when most needed.

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

A wrench comprising a socket-piece 5, formed integral with handle 6, said socket-piece provided with a longitudinal opening, as 7, and at its lower end with a depression, as 16, forming a lug which is longitudinally channeled at its front, and also provided on its top edge, in rear of said opening 7, with a pivoting-eye, as 12, and in rear of said pivoting-eye with a depressed seat for a spring, a sliding jaw, the stem of which is screw-threaded for a part of its length only, having a serrated upper end on a plane at right angles to the length of said stem and having the back surface of its upper end plain and slightly beveled, said stem guided in the channel of said lug 17, a milled nut co-operating with the screw-threaded stem of said sliding jaw and supported and guided in said depression 16 of the socket-piece, a pivoted jaw, as 15, serrated on its horizontal and vertical surfaces, and having a plain unserrated surface between its vertical serrations and its pivoting-eye and provided with pivoting-lugs adapted to co-operate with the pivoting-eye 12 on the upper edge of the socket-piece 5, and also provided in rear of said pivoting-lugs with a flat horizontal surface having a depressed spring-seat, a spiral spring, as 11, held in the depressions of the top edge of socket-piece 5 and the foot of pivoting-jaw 15 to coact with said jaw and socket, the back surface of the plain portion of said sliding jaw when the tool is in operation bearing against the unserrated front portion of the pivoted jaw, thus re-enforcing and strengthening the tool in operation, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 20th day of August, A. D. 1889.

THOMAS BIRD.

Witnesses:
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