No. 697,977. Patented Apr. 22, 1902.

G. W. BUFFORD.

PIPE WRENCH.

(Application filed Jan. 27, 1902.)

(No Model.)

Fig. 1.

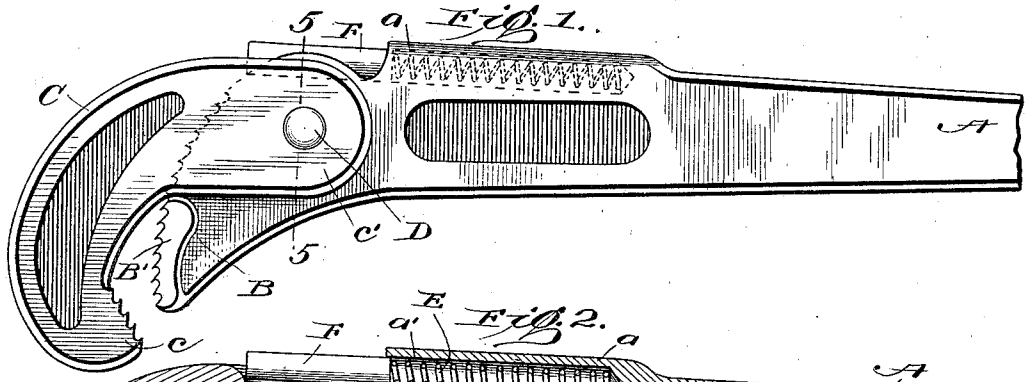


Fig. 2.

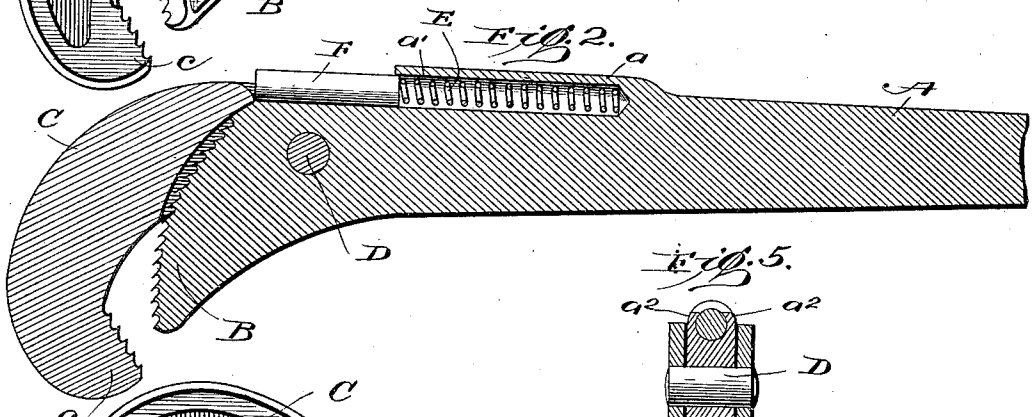
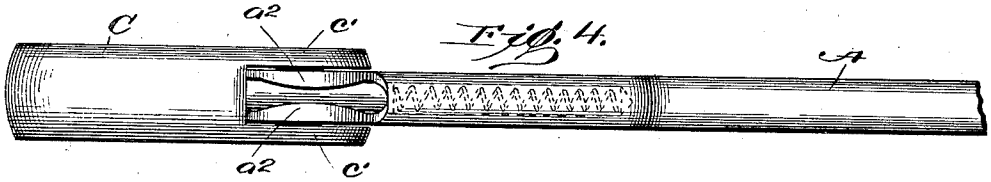


Fig. 5.

Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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PIPE-WRENCH.

SPECIFICATION forming part of Letters Patent No. 697,977, dated April 22, 1902.

Application filed January 27, 1902. Serial No. 91,388. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. BUFFORD, of the borough of Brooklyn, county of Kings, city and State of New York, have invented a new and Improved Pipe-Wrench, of which the following is a specification.

This invention relates to improvements in pivoted-jaw pipe-wrenches, and is embodied in the construction and arrangement of parts presently to be described.

Heretofore various attempts have been made to provide a pivoted-jaw pipe-wrench with means for normally closing the jaws. Such attempts may be classified as follows: First, those structures wherein a spring or spring-actuated member is carried by the movable jaw; second, those structures wherein a flat spring is employed, either attached to the movable jaw or stationary member, and, third, structures wherein a spring is carried by the stationary member and impinges directly or indirectly against the movable jaw. The present invention relates to an improvement in the latter type.

In the type of wrench to which the present invention relates it has heretofore been found necessary to form lateral projections or extensions on the pivoted jaw, so that in its movements a constant engagement would be maintained with the spring either directly or indirectly, and also in such structures it has not been practicable or possible to move the pivoted jaw back sufficiently to accommodate pipes of widely-varying diameters. In a modern type of wrench it is now recognized that a wide range of movement for the pivoted jaw is necessary and desirable and that the structure should be in itself compact, strong, and durable, and, further, to avoid as far as possible and practicable lateral projections on the two members, so that the wrench may as a whole, as far as possible, be of even and regular contour.

The principal object of this invention is the provision of a wrench which will possess all the necessary modern requirements as to shape and proportions by avoiding largely the presence of objectionable projections on the sides of the wrench, and in providing a wrench of modern type which will be so fashioned as to have a pivoted jaw which will have a wide range of movement and which will at the same time permit of the employment of a spring, conveniently of the coil type, supported and carried on the stationary member or handle in such a position as to act against the pivoted jaw throughout its entire movement, the tendency of the spring being to close the jaw.

Figure 1 is a side elevation of my improved wrench with the jaws in normal or fully-closed position. Fig. 2 is a sectional elevation of the same. Fig. 3 is a view, partly in section, of the wrench with the jaws separated to their full extent. Fig. 4 is a rear elevation of the upper part of the wrench. Fig. 5 is a section on line 5 5, Fig. 1.

In the following specification the terms "upper" and "lower" are employed to indicate relative proximity to or remoteness from the clamping end of the wrench, and "front" and "rear" to indicate, respectively, the side from which the pipe is inserted and the opposite edge.

In the drawings, A represents the body of the wrench of the general pattern commonly employed, terminating at its upper end with a jaw B, curved downward from front to rear and toothed or serrated throughout its entire length. The forward end of said jaw is preferably extended laterally to form a head B, corresponding in width with the movable jaw.

C represents the upper movable jaw, preferably formed with a smooth exterior, forming a continuation of the contour of the body or handle, and a curved interior face terminating at its forward end with a depending serrated beak *c* of the usual "Falcon" type. The rear end of the movable jaw is provided with a pair of elongated depending ears *c'*, arranged to take snugly over the portion of the stationary jaw in rear of the head B' and to extend downward along the body A a suitable distance.

D is a pivot-pin passing through said ears and the body A at or near the center of the latter and riveted in place, thereby avoiding external projections.

The body A is preferably provided with a

barrel portion a, extending along its rear edge and provided with a socket a', adapted to receive a coiled expansion-spring E and a cylindrical pin or follower F, bearing at its lower end upon the upper end of the spring and at its upper end against the movable jaw in a manner to be presently described. Above the upper end of the socket are arranged guides a^2, adapted to embrace opposite sides of the pin F and guide and secure the same against lateral play or displacement, while leaving a portion thereof exposed. These guides preferably form a continuation of the socket, said socket in effect extending upward to the lower extremity of the gripping-surface of the jaw B and having its upper portion cut away to expose the sides of the pin, the excision extending from above the plane of the pivot to a point below the same and the line of the cut coinciding with the arc of a circle described about the pivot D as a center, with a radius slightly longer than the distance from the axis of the pivot to the axis of the follower at the point of their closest proximity. By such construction the guides a^2 are arranged opposite the pivot, while leaving a space above and below into which the abutment portion of the movable jaw enters.

The lower edge of the movable jaw C, between the depending ears c', is rounded, as at c^2, to form a bearing or abutment for the upper extremity of the follower, and this abutment lies wholly within the plane of the edge of the wrench.

When the parts are assembled, the spring resting against the bottom of the socket and the lower end of the follower on the spring causes the inner portion of the flat upper end of the said follower to press against the bearing c^2 of the movable jaw, forcing said jaw forward to the position shown in Fig. 1. When the jaw is opened to receive a pipe, the bearing c^2 moves downward along the arc of a circle described about the pivot as a center until it reaches the lower limit of its movement directly below its initial position, where it is stopped by contact with the wrench-body. During this entire movement the bearing c^2 is in contact with the follower F, the diameter of said follower being sufficient to permit of the lateral movement due to the arc movement of the bearing and the curve of the latter allowing a rolling or rocking of the bearing on the end of the follower.

The arc shape of the guides a^2 prevents their interference with the free movement of the jaw, so that the same has or is permitted a wide range to accommodate pipes of widely-different diameters.

The follower itself, it will be noted, is a simple plain cylindrical pin economical to make and easy to assemble with the other parts of the wrench.

It will thus be seen that by the constructions described a wrench is provided which is exceedingly simple and compact in structure, practically smooth in exterior contour, with neither weakening incision nor space-taking projections, and having its follower so arranged as to permit the maximum opening of the jaws with a minimum lateral movement of the bearing-point of the movable jaw upon the follower.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. A wrench, having, in combination, the body provided with a fixed jaw and a socket, a pivoted movable jaw having a bearing in rear of the pivot, a spring-actuated follower slidably arranged in the socket and contacting with the bearing during the movement of the pivoted jaw, the upper and lower limits of the range of movement of the upper end of said follower being respectively above and below the plane of the pivot, and within the arc described by the bearing during the movement of the jaw.

2. A pipe-wrench, having, in combination, a body terminating at its upper end in a fixed serrated jaw, and provided at its rear edge with a longitudinally-arranged socket, a movable serrated jaw provided with elongated depending ears taking over the lower jaw and extending down upon the body, a pivot passing through said ears and body, a spring-actuated follower slidably arranged in the socket and bearing at its upper end against the pivoted jaw at a point between the depending ears, the upper and lower limits of the range of movement of said follower being respectively above and below the plane of the pivot.

3. A wrench, having, in combination, a body terminating in a fixed jaw and provided with a socket, a movable jaw pivotally mounted on the body, a pivot therefor, a spring-actuated follower slidably mounted in said socket and having an exposed portion projecting upward therefrom and bearing at its end against the movable jaw in rear of the pivot, and guides for the exposed portion of the follower.

4. A wrench, having, in combination, a body provided with a fixed serrated jaw and with a socket, a movable serrated jaw pivotally mounted on said body, a pivot therefor, a spring-actuated follower slidably mounted in said socket and bearing at its upper end against the movable jaw in rear of the pivot, and curved guides for said follower located directly in rear of the pivot, with their rear edges concentric with said pivot.

5. A pivoted-jaw pipe-wrench, having, in combination, a body having a fixed jaw, a pivoted jaw on the body, and a spring-actuated follower carried by the body extending above and below the plane of the pivot and engaging the pivoted jaw.

6. A pivoted-jaw pipe-wrench, having, in combination, a body having a fixed jaw, a pivoted jaw on the body, a spring-actuated follower on the body extending above and below the plane of the pivot, and guides for the follower embracing the sides only thereof.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GEORGE W. BUFFORD.

Witnesses:
GEO. M. RUSSELL,
F. W. TRABOLD.