

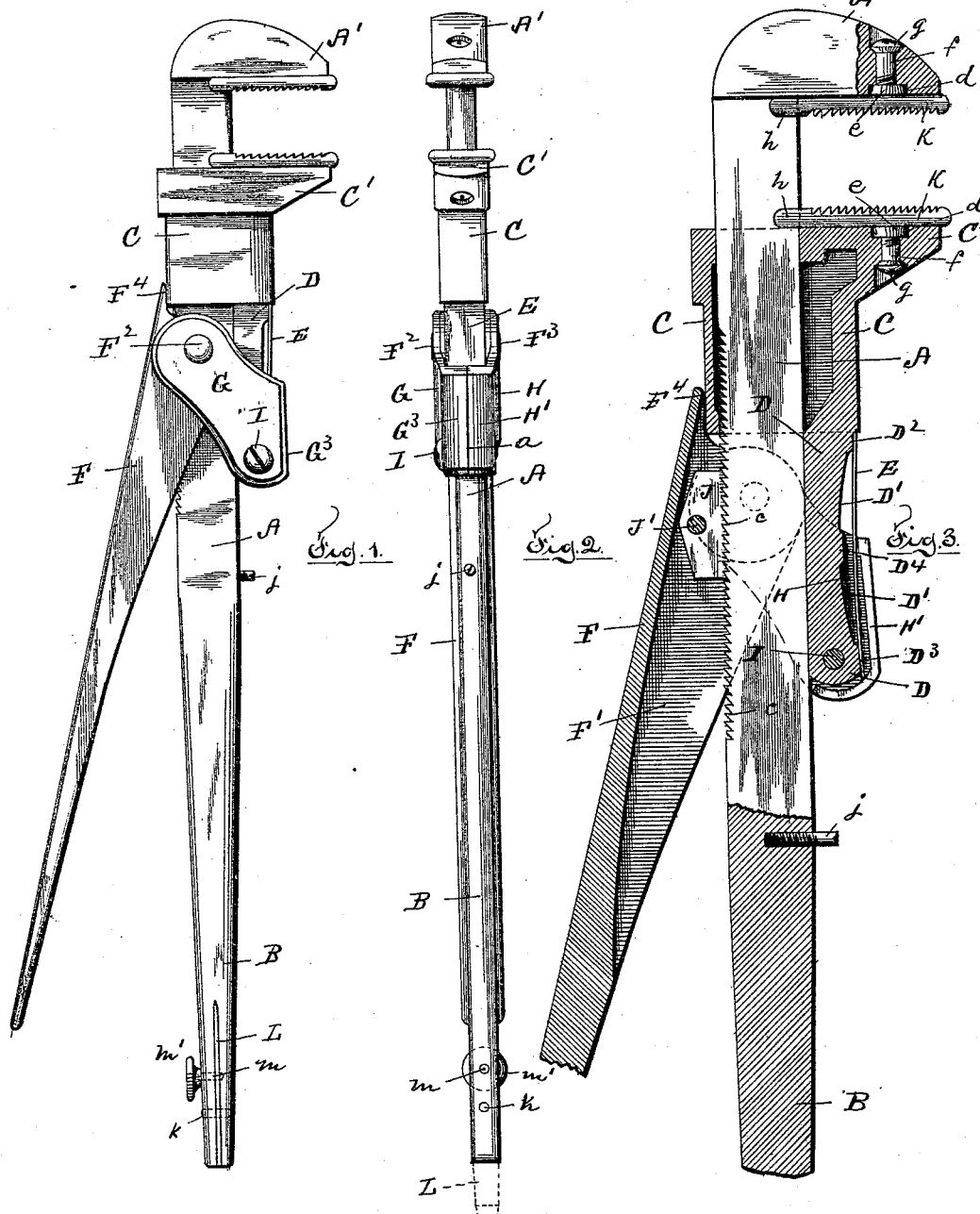
(No Model.)

2 Sheets—Sheet 1.

J. E. WAKEFIELD.
PIPE WRENCH.

No. 454,893.

Patented June 30, 1891.



Witnesses
Walter L. Brown
H. M. Fowler

Inventor
John E. Wakefield

By his Attorney

Rufus B. Fowler

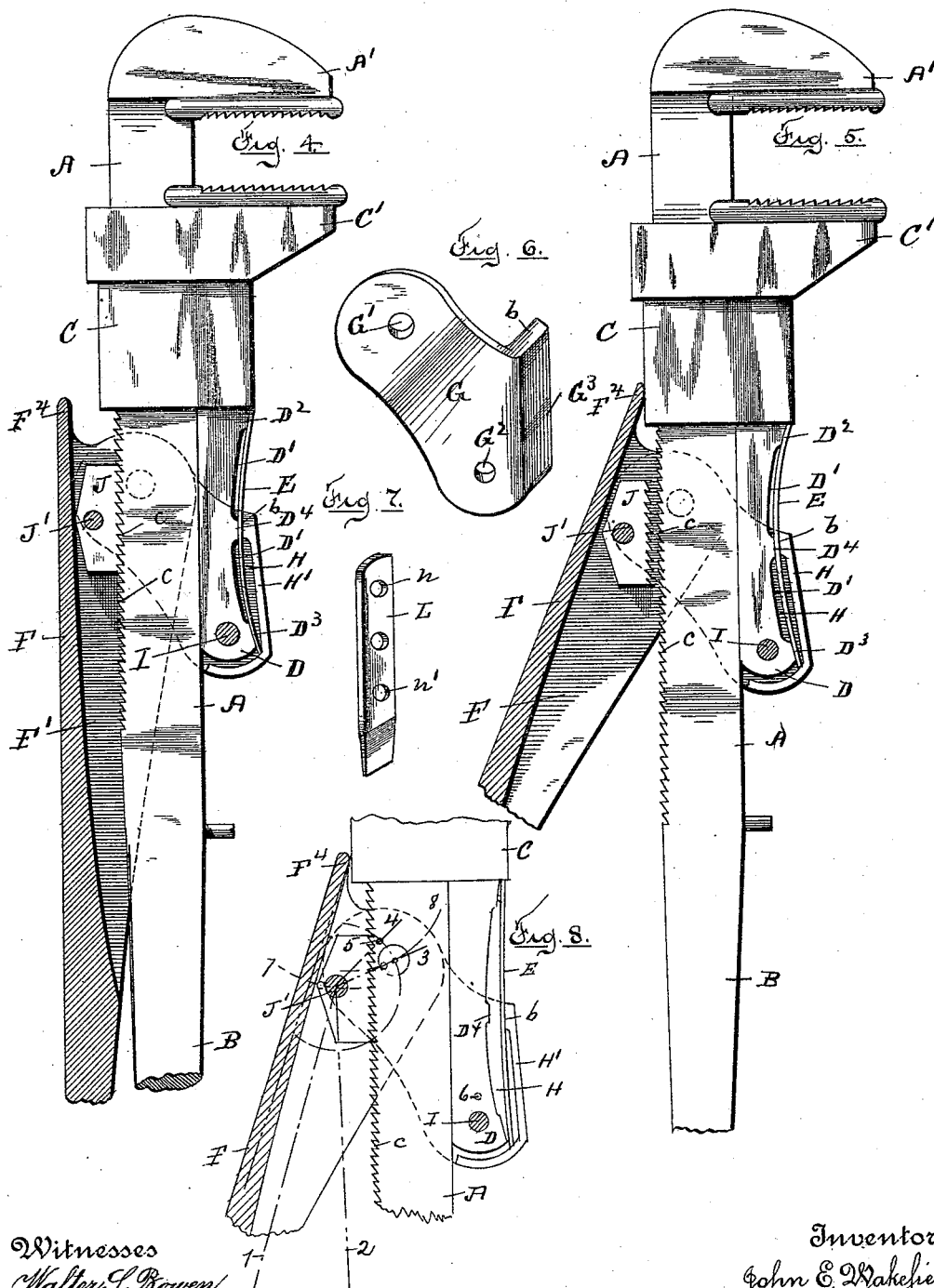
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UNITED STATES PATENT OFFICE.

JOHN E. WAKEFIELD, OF WORCESTER, MASSACHUSETTS.

PIPE-WRENCH.

SPECIFICATION forming part of Letters Patent No. 454,893, dated June 30, 1891.

Application filed November 26, 1890. Serial No. 372,670. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. WAKEFIELD, a citizen of the United States, and a resident of Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Pipe-Wrenches, of which the following is a specification, reference being had to the accompanying drawings, forming a part of the same, and in which—

Figure 1 represents a side elevation of a wrench embodying my invention. Fig. 2 is an edge view of the same. Fig. 3 is a side view, shown partly in section in order to disclose the operating parts of the wrench, which are represented in their normal position. Fig. 4 is a side view with the operating-handle shown in sectional view and with one of the links removed by which the operating-handle is connected with the movable jaw. Fig. 5 is a side view as shown in Fig. 4, but with the operating parts in a different position, those in Fig. 4 showing their position as the movable jaw is carried toward the fixed jaw and those in Fig. 5 representing them in the position assumed in disengaging the toothed saddle from the toothed bar. Fig. 6 is a perspective view of one of the links by which the operating-handle is connected with the movable jaw. Fig. 7 represents the screw-driver blade in detached view; and Fig. 8 is a diagrammatic view of the operating parts of the wrench, illustrating the action of the operating-handle.

Similar letters and figures refer to similar parts in the different views.

Referring to the drawings, A denotes the bar forming the fixed handle B and having a fixed jaw A' formed integrally therewith. Inclosing the bar A and capable of sliding thereon is the sleeve C, having the movable jaw C' and the arm D formed integrally with the sleeve. The arm D extends parallel with the bar A, and is preferably of the same thickness, so that the sides of the bar and the sides of the arm will be flush, and the outer side of the arm D is cut away at D' D', leaving the transverse flat bearings D² D³ for the blade-spring E, and also the central transverse flat rib D⁴ to check the flexure of the spring E, as hereinafter described.

F denotes the operative or movable handle, channeled at F' on its under side to receive the bar A and provided with the cylindrical lugs F² F³, the lug F² being clearly shown in Fig. 1 and the lug F³ being upon the opposite or outer side of the handle and having its axis coincident with the axis of the lug F², the two lugs F² and F³ serving as pivots for the links G and H, by which the handle F is connected with the end of the arm D. The link G is represented in perspective view in Fig. 6, and is provided with a hole G' to receive the pivotal lug F², and also with a hole G² to receive a pin or bolt by which the links G and H are pivoted to the end of the arm D. The link G has also a flange G³, which extends over the outer side of the arm D and is curved to cover the end of the arm D. The link H is precisely like the link G, already described, except that the flange is upon its opposite or reverse side, so that the two links become, respectively, right and left links, and the link H has the hole for the bolt I screw-threaded instead of blank, like the hole G².

The operative handle F is connected with the arm D by slipping the links G and H upon the pivotal lugs F² and F³, causing the flanged ends of the links to inclose the end of the arm D and then uniting the flanged ends of the links by the bolt I passing through the hole G² in the link G and a corresponding hole in the end of the arm D and screwing into the link H, thereby drawing the flanged ends of the links firmly together with the edges of the flanges G³ and H' abutting, as shown at a, Fig. 2, and forming a shell which incloses the end of the arm D. The flanges G³ and H' are provided with a transverse rib b, Figs. 3, 4, and 5, which rests against the blade-spring E. The rear side of the bar A is provided with the ratchet-teeth c for a portion of its length, and is engaged by the corresponding teeth of a saddle J, to which the operative handle F is pivoted by a pin J', which passes loosely through the saddle J and the sides of the bar F, the ends of the pin J' being covered by the links G and H, as indicated by the broken line denoting the edge of the link H in Figs. 3, 4, and 5. The links G and H therefore serve to retain the pin J' in place, the links themselves being held in

place by the bolt I, all the parts therefore being easily separated and the entire wrench released by the removal of the single bolt I.

The operative handle F is provided with a projecting prong F⁴, extending over the rear side of the sliding sleeve C and in the normal position of the parts resting upon the sleeve, as represented in Fig. 3, which shows all the operative parts of the wrench in their normal position, the saddle engaging the teeth *c* upon the bar A and the prong F⁴ resting upon the sleeve C, and the rib *b* upon the flanges G³, and H' of the links G and H bearing upon the blade-spring E, which in the normal position of the several parts described is in a state of slight tension, thereby drawing the saddle J closely against the toothed bar A and holding the prong F⁴ against the sleeve C and maintaining the handle F slightly separated from the handle B, as shown in Fig. 1 of the drawings.

In order to move the movable jaw C along the bar A toward the fixed jaw in the act of seizing the pipe, the handle F is brought toward the handle B, as represented in Fig. 4, rocking the handle F upon the pin J' and carrying the cylindrical lugs F² F³ around the pin J' and sliding the arm D, sleeve C, and movable jaw C' toward the fixed jaw A', at the same time compressing the blade-spring E until the movement is checked by the contact of the handle F with the handle B. The pressure thus exerted upon the end of the handle F to carry it toward the handle B will be exerted as pressure upon the pipe held between the jaws A' and C', and the pressure brought to bear upon the pipe will be to the pressure exerted upon the end of the handle F inversely as the distance between the center of the lugs F² F³ and pin J' is to the length of the handle F from the pin J' to the end of the handle. As soon as the pressure is removed from the end of the handle F the tension of the blade-spring E will restore the parts to their normal position, as represented in Fig. 3.

As the entire sliding movement of the sleeve C and movable jaw C' upon the bar A' is comparatively slight, by the movement of the handle F toward the handle B, as described, it is necessary to provide means whereby the distance between the fixed and movable jaws can be varied to accommodate pipes of different diameters. This is accomplished by raising the handle F or separating the handle F from the handle B, as shown in Fig. 4, causing the prong F⁴ to act as the fulcrum and the pin J' and connected saddle J to be lifted out of engagement with the teeth *c* upon the bar A. By moving the handle F toward or away from the fixed jaw A' while the saddle J is held from engagement with the toothed bar A the movable jaw C' is moved along the bar in position to allow the desired size of pipe to be received, the handle F is dropped to allow the saddle J to again

engage the toothed bar, and the pipe seized, as already described.

In the operation of separating the handles F and B, as in the operation of bringing them together, the spring E is compressed until checked by the rib D⁴, so that when the handle F is released the tension of the spring E will restore the operative parts of the wrench immediately to their normal positions.

In Fig. 8 I have indicated by a series of broken lines and the outlines of the parts of the wrench concerned to action of the handle F in the two operations already described.

In the operation of seizing the pipe the handle F (indicated by the broken line 1) is carried to the position of line 2, and the line 3, indicating the short arm of the lever, is carried to the position of line 4, bringing the center of the lugs F² F³ to position 5, thereby sliding the center of the bolt I to the position 6 and bringing the rib *b* by a transverse motion toward the rib D⁴. When the handle F is released, the spring E serves to return the parts to their original and normal position. When the handle F is raised upon the prong F⁴, the pin J' is carried along the arc 7, lifting the saddle from engagement with the bar A, and the lugs F² F³ are moved along the arc 8, compressing the spring E and bringing it in contact with the rib D⁴.

The faces of the jaws A' and C' are provided with circular recesses *d* to receive the bosses *e* upon the serrated plates K K, which are attached to the jaws by screws *f f* entering the bosses *e*, and having their heads countersunk at *g g*. The serrated plates are held by their bosses *e e* from any lateral movement upon the jaws, and they are held from rotating upon the screws *f* by the wings *h h*, which extend partly across the sides of the bar A. A pin *j* is screwed into the bar A to limit the sliding motion of the movable jaw upon the bar, and the bar A is provided with a slit in its end to receive the screw-driver blade L, which is pivoted upon a pin *k*, and is held in position when extended by the screw-threaded bolt *m*, having a milled head *m'*, and having its point entering the hole *n* in the blade L. When the blade L is turned upon the pin *k* to bring it wholly within the slit of the bar A, the screw-threaded bolt *m* enters the hole *n'*.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a bar having a fixed head and provided with a series of ratchet-teeth, of a sliding jaw, an arm integral therewith and extending parallel with said bar, a saddle engaging the teeth on said bar, a lever-handle pivoted on said saddle, and links connecting said lever-handle with the arm of said movable jaw, substantially as described.

2. In a pipe-wrench, the combination of a toothed bar having a fixed head, a sleeve sliding on said bar and carrying a movable jaw, a

lever-handle pivoted on an adjustable saddle, a saddle engaging said toothed bar, and a prong extending from said pivoted handle over said sleeve and serving as a fulcrum by which the saddle is lifted out of its engagement with said toothed bar, substantially as described.

3. The combination of a toothed bar having a fixed jaw, a sleeve sliding on said toothed bar and carrying a movable jaw, an arm on said sleeve parallel with said bar, a saddle engaging said toothed bar, a lever-handle pivoted on said saddle and having a prong extending over said sleeve and serving as a fulcrum by which said saddle is raised from its engagement with said toothed bar, substantially as described, links connecting said pivoted handle and said sleeve, and a spring applied to said links to hold the saddle in engagement with said toothed bar, substantially as described.

4. In a pipe-wrench, the combination, with a movable jaw having an arm, of a pivoted handle, links connecting said handle with said arm, said links having flanges inclosing the end of said arm and provided with abutting edges, substantially as described.

5. The combination, with a bar having a fixed jaw, of a movable jaw having an arm parallel with said bar, a pivoted handle, flanged links connecting said handle with said arm, a spring resting on said arm and acting upon said links, and a rib on said arm by which the angular motion of the links is limited, substantially as described.

6. The combination of a bar supporting a fixed jaw, a sliding jaw, a pivoted handle provided with lugs having coincident axes, links pivoted on said lugs and provided with flanges having abutting edges, and a bolt connecting the flanged ends of said links, substantially as described.

7. The combination of a bar having a fixed jaw, a movable jaw sliding on said bar, a pivoted handle provided with the lugs $F^2 F^3$, links connecting said handle with said movable jaw, said links being pivoted on said lugs, and a bolt I , connecting the opposite ends of said links together and forming a pivotal connection between said links and said movable jaw, substantially as described.

8. In a pipe-wrench, the combination, with the jaws provided with recesses, of plates having bosses entering said recesses, and attaching-screws, substantially as described.

9. In a pipe-wrench, the combination, with jaws provided with recesses, of plates having circular bosses entering said recesses, attaching-screws entering said bosses, and wings h , substantially as described.

10. In a pipe-wrench, the combination, with a fixed handle provided with a slit in its end, of a pivoted screw-driver blade and a retaining-bolt, substantially as described.

Dated November 22, 1890.

JOHN E. WAKEFIELD.

Witnesses:

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