

(No Model.)

E. A. COCHRAN.
WRENCH.

No. 539,890.

Patented May 28, 1895.

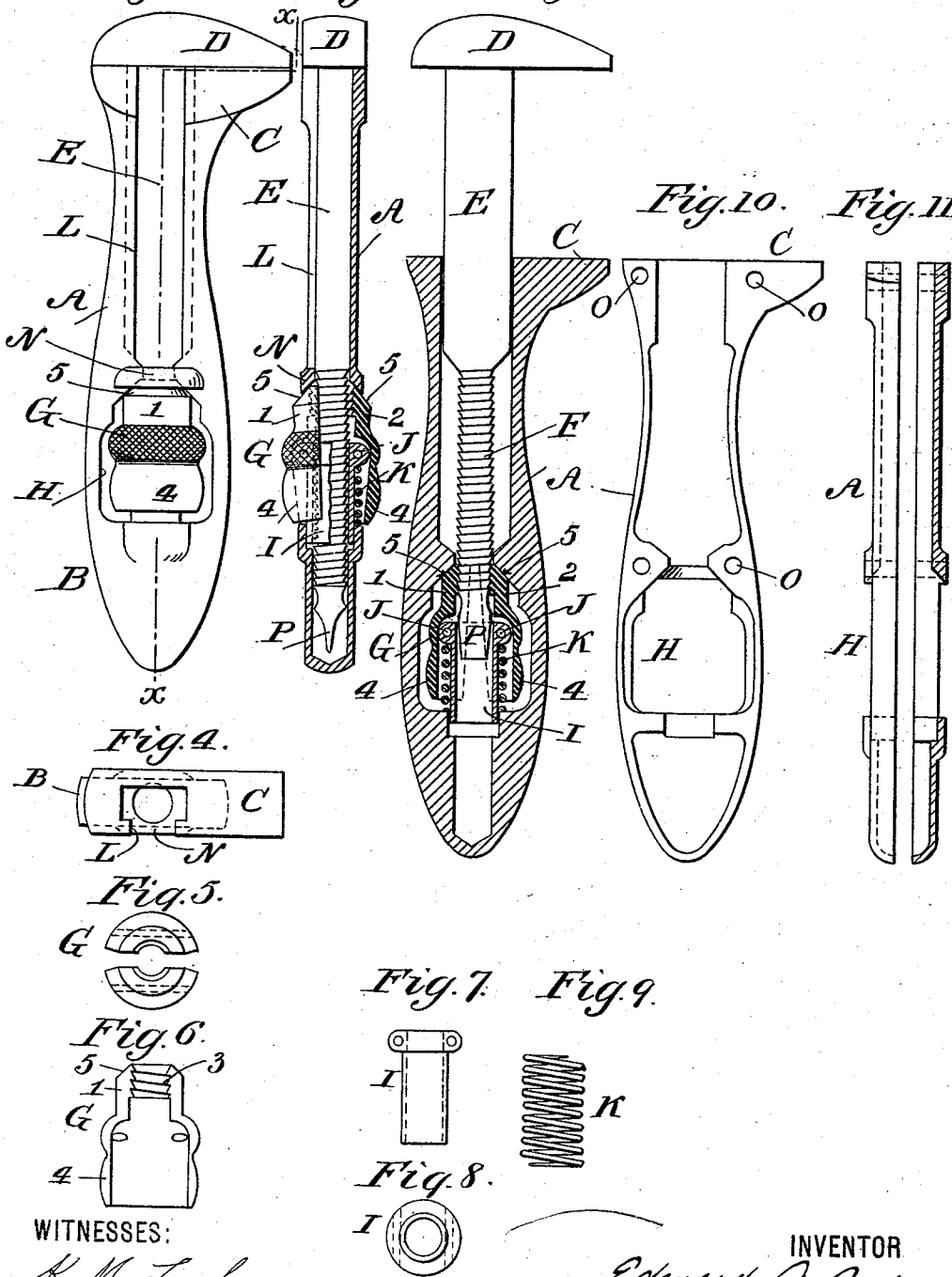
Fig. 1.

Fig. 2.

Fig. 3.

Fig. 10.

Fig. 11.



WITNESSES:

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WRENCH.

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To all whom it may concern:

Be it known that I, EDWARD A. COCHRAN, 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 Wrenches, of which the following is a specification.

My invention relates to nut or pipe or other wrenches, in which the sliding shank of the movable jaw is provided with a series of teeth, and a suitable pawl is provided to engage the same, permitting a quick adjustment but a firm retention of the movable jaw at any point.

The object of my invention is to combine with such toothed shank and pawl the advantages of a screw and nut which will enable the user to finish the rapid adjustment of the movable jaw with a more accurate final adjustment, preparatory to seizing and turning a nut or bolt or other object, and to clamp the movable jaw if necessary, against the work.

To this end, my invention consists in a wrench having its movable jaw provided with a screw-threaded shank, and a combined pawl and rotary nut engaging with the screw threads of said shank; also in a peculiar novel construction of said screw threads; and also in other features of improvement; and in order to enable others skilled in the art to which my invention appertains to understand and use the same, I will proceed to describe the details of its construction, explain its operation, and subsequently point out in the appended claims its novel characteristics.

Referring to the accompanying drawings, in which like letters of reference indicate like parts throughout the several views, Figure 1 is a side elevation of my improved wrench, showing the jaw closed and the nut in a given position of rotation; Fig. 2, a front elevation, partly in section, on the line *x x*, Fig. 1, showing the nut in the same position of rotation, but compressed to release the jaw-shank; Fig. 3, a side sectional elevation showing the movable jaw open and the nut in a different rotative position, and also relieved from compression to engage the jaw-shank. Fig. 4 is a top plan view of the fixed jaw and frame. Fig. 5 is a top end view of the nut; Fig. 6, an inside view of one portion of the

nut. Fig. 7 is a side view of the bushing to which the nut-pawls are pivoted; Fig. 8, a bottom end view thereof, and Fig. 9 a side view of the spring which moves the bushing endwise and causes the nut-pawls to engage the movable jaw-shank of the wrench. Fig. 10 is an interior view of one detached half of the frame of the wrench, showing a modified construction; and Fig. 11 is a side view of the two halves of said frame separated.

A, represents the frame, comprising the handle B, and fixed jaw C. The movable jaw D, is mounted on the end of its shank E, which is screw threaded at F. A combined nut and pawl device G which I herein term a "pawl-nut" engages with the screw threaded shank E, and is situated in a mortise H, provided therefor in the handle B of the wrench, and said pawl-nut G, abuts endwise against the upper end of the mortise H, while it is rotatively free to turn therein.

The pawl nut G, is composed of two parts or pawls 1, 2, pivoted on the bushing I, at J, J, and above said pivots, the halves of the nut are provided with internal screw threads 3, 3, to fit the screw thread of the shank E, and below said pivots, the halves of the nut, or pawls, are extended to form tail pieces 4, 4, to be compressed by the fingers and thumb in order to spread or retract the upper engaging ends of the pawl-nut from the threads of the shank E. The upper ends 5, 5, of the halves of the nut G are beveled conically, and the upper end of the mortise H, is likewise beveled. A spiral spring K, seated in the bottom of the mortise, presses upward against the shoulder of the bushing I, forcing the upper ends of the pawls of the pawl-nut upward against the said beveled surfaces and therefore inward against the threads of the shank E, so as to grip the same. The screw threads of the shank E, have, as shown, the shape of ratchet teeth in the longitudinal section of the shank, said teeth being inclined upward toward the removable jaw D. Thus the spreading strain on the jaws C, D, of the wrench is resisted firmly by the grip of the nut G, and moreover, the binding force of the nut G, is increased with the increase of longitudinal strain upon the shank E, by reason of the pressure of the beveled surfaces at the ends of the nut pawls against the bev-

eled surfaces at the upper end of the mortise H, as aforesaid. The bushing I, serves as a guide and retaining agent for the nut G when the shank E is withdrawn and also as a centering agent for the nut around the shank E, insuring the separation of both pawls from the shank when the lower part of the nut is compressed. The said bushing may, however be omitted, and the halves of the nut G, may be hinged directly to each other. Furthermore the nut may be variously modified and constructed as to the manner of its division into relatively movable parts, within the scope of my invention, which is not to be construed as limited to the construction shown.

The handle A, of the wrench as shown in Figs. 1 to 4 inclusive, is cast with a slot L, for convenience in milling out the groove N, which receives the shank E. A bridge N is left at the end of the slot L which affords an abutment for the nut G. The handle A, may be modified as in Figs. 10 and 11, constructed of two parts of light structure formed by drop-forging, which parts may be united together by rivets inserted at O, O, &c.

The extremity of the shank E is provided with a screw driver P, which by the compression of the nut G, may be instantly withdrawn and ready for use.

The frictional resistance of the nut G against turning, caused by the spring K, serves to prevent the jaws of the wrench from being displaced from their adjustment when the wrench is laid down on its side on a plane surface; the nut or screw head, as employed in wrenches heretofore being disposed to roll, and turn out of place, requiring constant readjustment.

An advantage of my invention consists in the two combined means of adjustment, first, by expanding the threaded segments 1, 2, of the nut G, and moving the jaw D freely and instantaneously to any desired position, and

second, by revolving the nut G when engaged, to bring the jaw D, to the exact position desired.

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

1. In a wrench, the combination of a fixed jaw and its frame, a movable jaw and its screw-threaded shank, a rotary pawl-nut supported endwise in said frame; said nut composed of pivotally mounted internally screw-threaded segments engaging with said shank; each segment provided with a tail piece adapted whereby the said nut may be expanded by the compression of the fingers and thumb upon said tail pieces, substantially as described.

2. In a wrench, the combination of a fixed jaw and its frame, a movable jaw and its screw-threaded shank, and a rotary segmentally divided pawl-nut having its segments beveled at one end abutting on beveled surfaces in said frame, and a spring tending to force the nut endwise against said beveled surfaces of the frame and compress the segments of the nut to engage with the screw-threads of said shank, substantially as described.

3. The herein described nut composed of segments operating functionally as pawls, the same having tail pieces, and a central rotary sleeve for the reception of the screw, to which sleeve the segments are pivoted; said sleeve serving to center the segments when disengaged from the screw, substantially as described.

Signed at New York city, in the county of New York and State of New York, this 26th day of September, A. D. 1894.

EDWARD A. COCHRAN.

Witnesses:

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