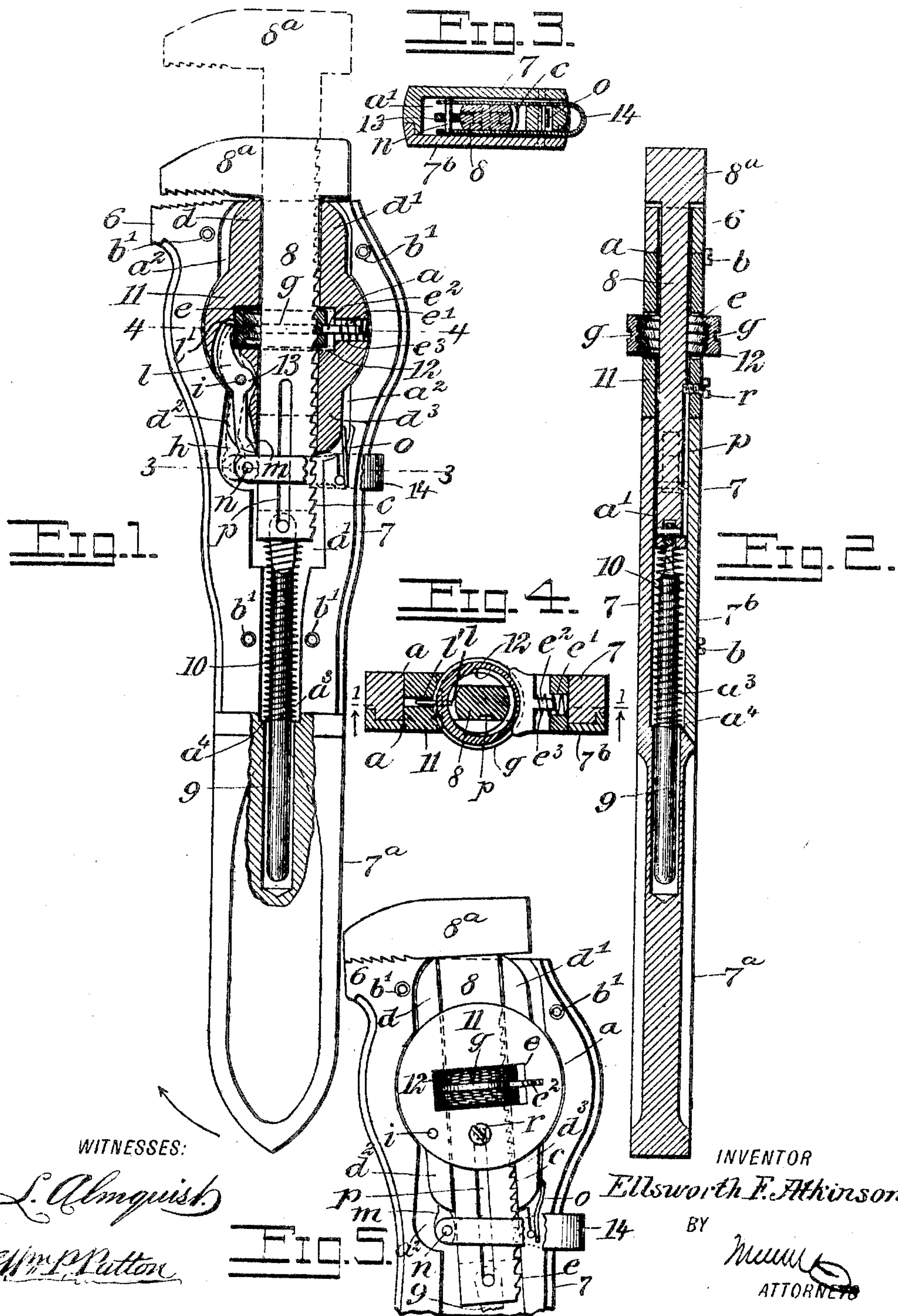


No. 797,546.

PATENTED AUG. 22, 1905.

E. F. ATKINSON.  
WRENCH.

APPLICATION FILED DEC. 15, 1904.





# UNITED STATES PATENT OFFICE.

ELLSWORTH F. ATKINSON, OF BATTLECREEK, MICHIGAN, ASSIGNOR OF  
ONE-HALF TO HENRY JOHN THOMAS, OF CERESCO, MICHIGAN.

## WRENCH.

No. 797,546.

Specification of Letters Patent.

Patented Aug. 22, 1905.

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*To all whom it may concern:*

Be it known that I, ELLSWORTH F. ATKINSON, a citizen of the United States, and a resident of Battlecreek, in the county of Calhoun and State of Michigan, have invented a new and Improved Wrench, of which the following is a full, clear, and exact description.

This invention relates to a class of wrenches having a fixed jaw and a movable jaw, and has for its object to provide novel details of construction for a wrench of the indicated class which adapt it for convenient adjustment to engage cylindrical or angular objects between its jaws and afford means for reliably holding the movable jaw at a desired distance from the fixed jaw.

The invention consists in the novel construction and combination of parts, as is hereinafter described, and defined in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a partly-sectional side view of working parts substantially on the broken line 1 1 in Fig. 4. Fig. 2 is a longitudinal sectional view taken substantially through the center of the wrench. Fig. 3 is a transverse sectional view substantially on the line 3 3 in Fig. 1. Fig. 4 is a transverse sectional view substantially on the line 4 4 in Fig. 1; and Fig. 5 is a side view of the wrench near its jaws, a removable side wall being displaced to show details it normally covers.

A fixed jaw 6 is formed at one end of a handle-bar 7, the adjacent body portion of which is suitably widened to provide material for the formation of said jaw, as shown in Figs. 1 and 5. The handle-bar 7 has flattened sides, and through the portion thereof that is near the fixed jaw 6 a circularly-edged opening  $a$  is formed. Between a grip-piece or handle  $7^a$  at the opposite end of the handle-bar 7 from that whereon the fixed jaw 6 is formed and said jaw the handle-bar portion is reduced in thickness sufficiently to receive a cap-plate  $7^b$ , that forms a side wall and is secured in place by screws  $b$ , which pass through the cap-plate and screw into tapped holes  $b'$  in the body portion 7. Registering with the circular opening  $a$  a like aperture  $a$  is formed in the cap-plate  $7^b$ . A flat-bottomed recess  $a'$  is formed longitudinally in

one side of the handle-bar portion, that extends between the grip-piece  $7^a$  and the jaw 6, said recess being open on the side thereof which receives the cap-plate  $7^b$  and is closed by said cap-plate. As shown in Figs. 1 and 5, the recess  $a'$  is widened toward the end having the fixed jaw 6 thereon, and this widened portion  $a^2$  intersects the circular opening  $a$ , thus producing similar flat-bottomed channels which extend from the front end of the narrower recess  $a'$  toward and through the end wall of the body 7, from which the jaw 6 extends laterally.

A slide-bar 8, having a jaw  $8^a$  formed on one end thereof, is fitted to slide longitudinally in the handle-bar 7, seating in the recesses  $a'$   $a^2$ , the jaw  $8^a$  corresponding on its gripping-face with the gripping-face of the jaw 6, over which it projects and nearly contacts with when the bar 8 is fully inserted into the recesses it occupies, as shown in Fig. 1.

Centrally and longitudinally in the handle-bar 7 and grip-piece  $7^a$  is formed a spring-holding pocket or chamber  $a^3$ , that extends from the recess  $a'$  to a point near the forward end of the grip-piece, where said chamber is reduced in diameter, producing an annular shoulder  $a^4$ . Upon the inner end of the slide-bar 8 is loosely secured one end of a guide-rod 9, which works in the portion of the chamber  $a^3$  of least diameter and is thus held centrally in the wider portion thereof. On the guide-rod 9 is mounted a coiled spring 10, that seats upon the annular shoulder  $a^4$  with one end, the opposite end pressing upon the inner end of the slide-bar 8. On the edge of the slide-bar 8 opposite that from which the jaw  $8^a$  projects a coarse thread-like rack  $c$  is formed, which extends from the inner end of the slide-bar to a point near the jaw thereon.

In the circular openings  $a$  in the handle-bar and cap-plate is loosely fitted a rockable block 11, through which is formed an opening at the center of thickness, which is adapted to receive the slide-bar 8 and loosely incase it. On the periphery of the block 11 are formed two pairs of wings  $d$ ,  $d'$ ,  $d^2$ , and  $d^3$ . These wings in pairs project oppositely and embrace the slide-bar, occupying the recesses  $a^2$ , and it will be seen that said wings have suitable lateral clearance from the sides of the recesses, so that the block 11 may be rocked a limited distance, and thus dispose the jaw  $8^a$



parallel with or inclined somewhat away from the working face of the fixed jaw 6.

Transversely in the block 11 at its center a rectangular opening  $e$  is formed for the accommodation of a ring-nut 12, which is interiorly threaded and mounted upon the bar 8, the thin-walled ring-nut having such internal diameter as will permit it to slide freely on the slide-bar 8, but by lateral adjustment be caused to engage the thread therein with teeth of the rack  $c$ , and thus engage the nut and rack. A circumferential channel  $g$  is formed in the periphery of the ring-nut 12 near its transverse center, and for convenience in manually turning the nut its surface each side of the channel is roughened.

Opposite the rack-teeth  $c$  a perforation  $e'$  is formed in the block 11, which extends from an end wall of the rectangular opening  $e$  outward and through the convex edge of said block, and in the perforation a presser-bar  $e^2$  is placed, having one widened end seated in the channel  $g$  and the reduced body thereof encircled by a spring  $e^3$ , that when in place bears at its outer end upon the concave wall of the circular opening  $a$ , wherein the block 11 is located, and it will be seen that the spring  $e^3$  by its expansion normally holds the thread in the ring-nut 12 engaged with the rack-teeth  $c$ . The pair of opposite wings  $d^2$   $d^3$  which extend from the block 11 toward the coiled spring 10 coact with the other pair of wings  $d$   $d'$  to afford a bearing of considerable length on opposite side edges of the slide-bar 8.

A recess  $h$  is formed in one side of the wing  $d^2$ , wherein is seated a rock-bar 13, which is pivoted at  $i$  upon the wing, this pivot connection being nearer one end  $l$  of the lever than it is to the other end  $m$ . The end portion  $l$  is formed with a toe  $l'$ , that projects into the channel  $g$  in the ring-nut 12 directly opposite the presser-bar  $e^2$ .

A U-shaped lever 14 is loosely fitted in a suitable opening formed transversely in the handle-bar 7, so that the two spaced limbs of said lever may at their ends be lapped upon the remaining end portion of this lever which projects away from the ring-nut 12 and be thereon pivoted, as shown at  $n$  in Figs. 1, 3, and 5.

In a recess of slot form that extends from the end wall of the recess  $a^2$ , which is occupied by the wing  $d^3$ , a plate-spring  $o$  is secured by one end and projects toward said wing, whereon the free end of the spring presses, said pressure holding the working face of the jaw  $8^a$  inclined slightly away from a like face on the fixed jaw 6. The jaws 6 and  $8^a$  are preferably serrated transversely, the teeth of the jaw 6 hooking outward or toward its free end and the teeth of the jaw  $8^a$  inclining oppositely or hooking inward.

A groove  $p$  is formed in one side of the slide-bar 8, extending longitudinally from a

point near the inner end of said bar, and a set-screw  $r$  is screwed through a tapped perforation in the adjacent side wall of the rockable block 11 into said groove, the length of the latter determining the extent of longitudinal movement had by the slide-bar and jaw  $8^a$  thereon, as the inserted end of the set-screw will engage the innermost end of the groove when the spring 10 is permitted to freely expand and press the slide-bar outward. If the wrench-jaw  $8^a$  is pressed upon when in the position indicated by dotted lines in Fig. 1, it and the slide-bar 8 will slide toward the fixed jaw 6, as the teeth  $c$ , that form the screw-threaded rack on the slide-bar, incline toward the jaw  $8^a$ , and therefore are adapted to slide inward over the thread in the ring-nut 12 against the expansive force of the spring 10. It will be seen that this function of the slide-bar and jaw thereon permits the instant adjustment of the jaw  $8^a$  for embracing a pipe or round bolt-body between the jaws. As if when pressed inward the nut does not exactly mesh with the rack-teeth  $c$ , the nut may be turned slightly in either direction to effect such an embrace, whereupon the swinging movement of the grip-piece  $7^a$  in the direction of the curved arrow in Fig. 1 will cause the teeth on the jaws to bite upon the object between them and hold it firmly, the jaw  $8^a$  then rocking toward the free end of the jaw 6 as the wrench is turned bodily in the direction of said arrow.

At any time—as, for instance, when the wrench is gripped upon a bolt-body and a release is necessary to permit a change of position to be had to renew a turning movement of the bolt—this can be readily effected by pressure applied upon the looped end of the lever 14, which will rock the toe  $l'$  of the rock-bar 13 into enforced engagement with the ring-nut 12, thus pressing said nut so as to release it from the rack-teeth  $c$ , which will permit the coiled spring 10 to force the jaw  $8^a$  outward, whereupon a new hold may be effected by manipulation of the wrench, as already described.

It will be obvious that the improved wrench may be employed for loosening or tightening pipes and cylindrical-bodied bolts or be engaged with nuts of different sizes or shapes for their adjustment on bolts or the like.

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

1. The combination with a handle-bar having a fixed jaw extended from one end at one edge, and a recess formed longitudinally in one side of the bar, and also having a circular opening laterally therethrough near said fixed jaw, of a circularly-edged block in said circular opening, and having wings thereon seated in the recess, means for holding the block free to rock in the opening, a slide-bar having a mating jaw and slidable in a passage through the rockable block, means for holding the



slide-bar and jaw thereon at any point of sliding adjustment, and means for releasing said slide-bar.

2. The combination with a handle-bar having a fixed jaw at one end and on one edge, said handle-bar having a longitudinal recess in one side thereof, and a circular aperture laterally therethrough near the fixed jaw, and a cap-plate removably held on the handle-bar over the recess, having a circular opening therein opposite the mating opening in the handle-bar, of a circularly-edged block in the registering circular openings in the handle-bar and cap-plate, said block having a passage formed therein across its center, a slide-bar working in said passage and having a jaw thereon mating with the other jaw, and means for holding the slide-bar and jaw thereon at any point of sliding adjustment.

3. The combination with a handle-bar having a fixed jaw at one end on one edge, a slide-bar held to reciprocate in the handle-bar and having a mating jaw opposite the fixed jaw, and a coiled spring in the handle-bar pressing

on the inner end of the slide-bar, of a series of rack-teeth on one edge of the rack-bar forming a fragmentary thread thereon, a ring-nut loosely mounted on the slide-bar so that its internal thread may be engaged with the teeth of the rack or released therefrom by a shifting movement of the nut, said nut having a peripheral groove, a presser-bar seated by one end in said groove, a spring adapted for pressing said presser-bar and ring-nut toward the rack-teeth, a rock-bar pivoted in a recess in the handle-bar opposite the presser-bar, and a lever extended transversely in the handle-bar and pivoted at the inner end on an end of the rock-bar, the other end of said rock-bar engaging the peripheral groove in the nut.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELLSWORTH F. ATKINSON.

Witnesses:

H. J. THOMAS,

C. H. CANFIELD.