

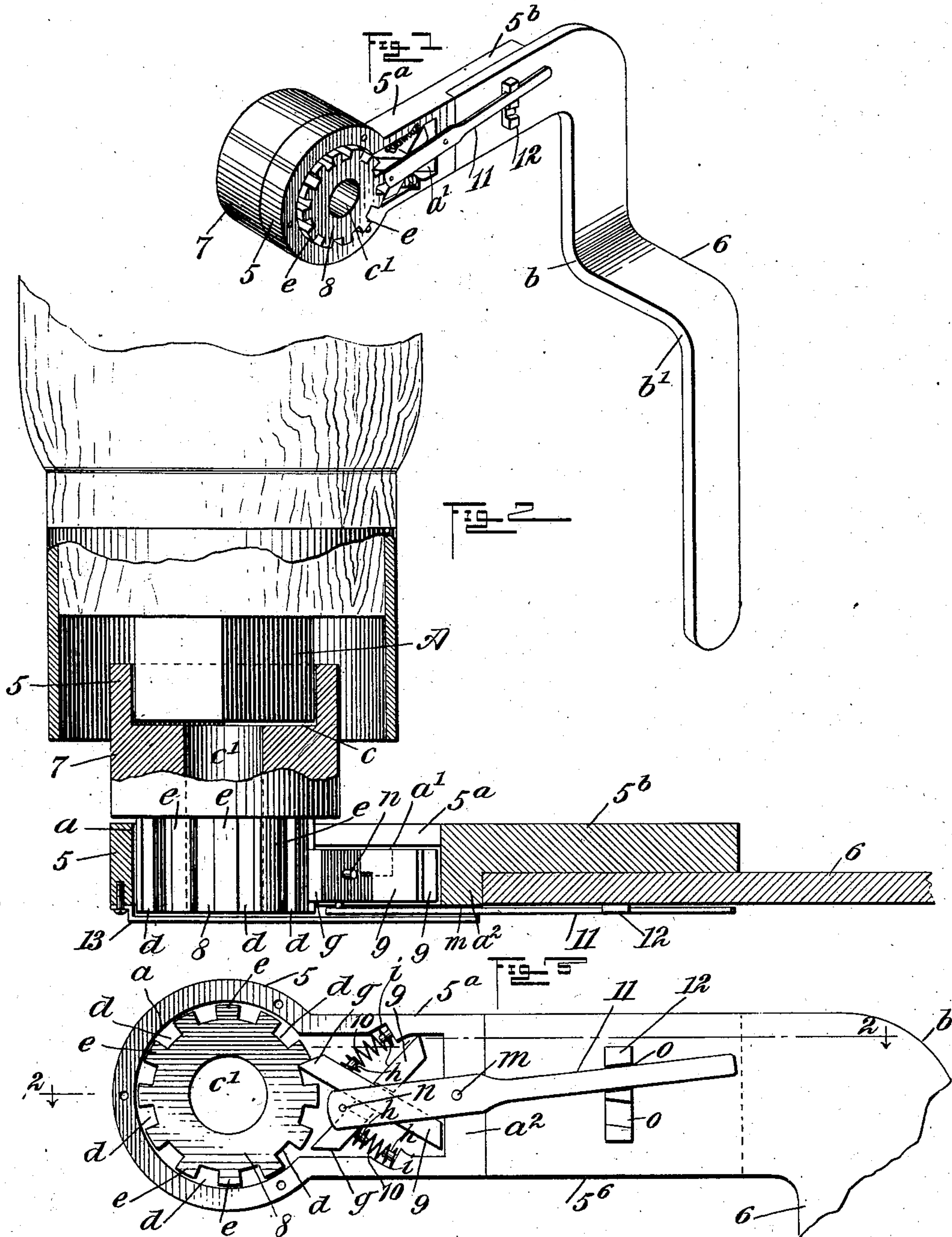
No. 726,012.

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H. E. ANDREW.
NUT WRENCH.

APPLICATION FILED JAN. 20, 1903.

NO MODEL.



WITNESSES:

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HOWARD EMMET ANDREW, OF ENDICOTT, WASHINGTON.

NUT-WRENCH.

SPECIFICATION forming part of Letters Patent No. 726,012, dated April 21, 1903.

Application filed January 20, 1903. Serial No. 139,842. (No model.)

To all whom it may concern:

Be it known that I, HOWARD EMMET ANDREW, a citizen of the United States, and a resident of Endicott, in the county of Whitman and State of Washington, have invented a new and Improved Nut-Wrench, of which the following is a full, clear, and exact description.

This invention relates to wrenches of the class employed for turning nuts on bolts or the like, and more particularly of a kind embodying a ratchet-wheel and pawl as operative elements, and has for its object to provide novel details of construction for a device of the character indicated which are simple, practical, adapt the device for use either as a right-hand or a left-hand wrench, and afford means for a quick change in adjustment to enable the wrench to be used in either direction for screwing up or removing nuts from bolts or studs, as occasion may require.

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 perspective view of the improved wrench. Fig. 2 is a partly-sectional plan view substantially on the line 2-2 in Fig. 3, showing the wrench applied upon the spindle-nut of a vehicle-axle for its adjustment; and Fig. 3 is a side view of interior details of the wrench exposed by removal of the cap-plate from the hollow head of the wrench.

The improved nut-wrench is adapted for use to screw or unscrew nuts on bolts or studs, and it is shown as applied to the spindle-nut of a vehicle-axle to illustrate its manner of use.

In the drawings that represent the construction and relative arrangement of parts embodying the improvement, 5 indicates the hollow head of the wrench-lever, consisting of a cylindrical case open at each side and having a circular opening *a* therethrough. The case 5 is extended from its periphery to produce a lateral extension 5^a thereon, having a chamber *a'* therein, which communicates with the opening *a* but is closed on one side. From

the chamber *a'* the extension 5^a is prolonged to afford a solid shank 5^b, constituting a stub-handle, whereon a handle-lever 6 is secured, bent at *b* and again at *b'* to offset the main portion of the lever, so as to give it clearance from a wheel-hub or other object that the wrench may rotate near when applied for the removal of a nut or its replacement when removed.

The socket-head 7, that engages a nut for its rotatable movement, is preferably in the form of a cylindrical block of proper dimensions having an angular recess *c* formed in one end to receive a nut, (indicated at *A* in Fig. 2.) An axial perforation *c'* of suitable diameter extends through the socket-head 7 and likewise through an integral hub extension therefrom.

The hub extension 8 is substantially cylindrical and projects centrally from the end wall of the socket-head opposite that having the recess *c* formed therein. Said hub has a series of spaced transverse grooves equal in width formed in its periphery, whereby a corresponding series of transverse teeth *e* is formed therein and extend around the hub extension.

In the chamber *a'* of the stub-handle 5^a two pawl-levers 9 are loosely held, these levers, of similar form and dimensions, each having a sloped end *g*. The pawl-levers are flat-sided and are placed one on the other cross-wise, as shown in Figs. 1 and 3, having a suitable length to permit them to be separately engaged with the teeth *e* by entrance between two adjacent teeth when the pawl to be thus engaged is suitably adjusted. Each pawl-lever 9 is engaged at its edge nearest an adjacent side wall of the chamber *a'* by an expansion-spring 10, held in place by pins *h*, and at one end seats in a notch *i*, formed in a respective side wall of the chamber *a'*, so that the stress of the springs will be adapted to press the sloped ends *g* of the pawl-levers 9 toward the teeth *e* and enter between adjacent pairs of teeth when permitted to do so. A tripping-lever 11 is provided to change the direction of rotative movement given to the socket-head 7 by an adjustment of the pawl-levers effected by said tripping-lever, the latter consisting of a flat bar of proper length pivoted between its ends upon the end wall

α^2 of the chamber α' , as indicated at m . This disposal of the tripping-lever 11 projects one end of the same across the lapped portions of the pawl-levers 9, whereon it loosely contacts, and from the side of the tripping-lever that is imposed upon the pawl-levers a pin n projects between the adjacent edges of the pawl-levers. Obviously a rocking movement of the tripping-lever 11 will cause the pin n to alternately press upon one of the pawl-levers toward which it is rocked, which will carry the pawl end of said lever 9 away from engagement with the teeth e and permit the stress of the spring 10, that engages the other pawl-lever, to enforce an engagement of the pawl end g on said lever with the teeth e , as is clearly shown in Fig. 3.

Upon the stub-handle 5^b a detent-block 12 or an equivalent projection is formed or secured, which is notched on its exposed face to receive the handle portion of the tripping-lever 11, said pair of notches o being spaced apart such a distance as will adapt them to hold the tripping-lever properly adjusted for contact with the pawl-levers 9, respectively, to retain an appropriate pawl engaged with the teeth e on the ratchet-hub 8.

A cap-plate 13 is secured over the tripping-lever 11 and retains it, as well as the pawl-levers 9, in proper relative positions within the chamber α' , said cap plate being secured in place by screws or other means.

In operation the socket-head of the wrench is applied upon a nut and the tripping-lever 11 rocked to cause an appropriate one of the pawl-levers 9 to engage its end g with the ratchet-hub 8, which will enable the turning movement of the wrench-lever in a proper direction for a corresponding movement of the engaged nut. As the pawl will freely rock for a successive engagement with the series of teeth e on the ratchet-hub 8, it will be seen that the nut may be actuated either by a vibration of the wrench-lever or by a continuous turning movement of the latter. To reverse the direction of turning movement of an engaged nut, it is only necessary to properly adjust the tripping-lever 11, whereby to engage an appropriate pawl-lever 9 with the

ratchet-hub 8, and then vibrate or rotate continuously the handle-lever 6.

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

1. A nut-wrench comprising a bent-handle lever having a circular case at one end from which projects a chambered extension forming a portion of the handle-lever, a cylindrical head-block having a socket in one end and a toothed extension at the opposite end, two crossed and spring-pressed pawl-levers seated operatively in the chamber of the handle-lever, a tripping-lever pivoted on the end wall of the chambered extension, and having a depending pin disposed between the pawls near the toothed extension of the head-block, and by a vibration of the lever adapted to hold either pawl out of mesh with the toothed extension, and a cap-plate loosely covering the pawls and lever.

2. A nut-wrench comprising a bent-handle lever having a circular case on one end, from which projects a chambered extension forming a portion of the handle-lever, a cylindrical head-block having an angular socket at one end, and a cylindrical toothed hub projected at the opposite end, which loosely occupies the aperture of the case, two crossed pawl-levers having a sloped end on each adapted to engage between the teeth of the hub, said pawl-levers being seated in the chamber of the handle-lever, an expansion-spring for each pawl-lever, adapted to press said levers toward the teeth of the hub, a tripping-lever pivoted between its ends on the end wall of the chamber and having a pin disposed between the pawl-levers near their sloped ends, said pin being adapted to rock either pawl away from the toothed hub, and a cap-piece for the case, loosely covering the pawls and tripping-lever.

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

HOWARD EMMET ANDREW.

Witnesses:

MYRON A. SHERMAN,
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