

No. 663,294.

Patented Dec. 4, 1900.

J. M. NESLEY.
REVERSIBLE WRENCH.

(Application filed July 5, 1900.)

(No Model.)

Fig.1,

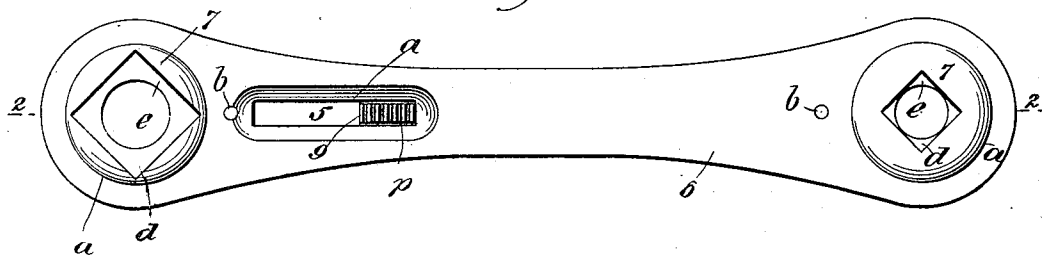


Fig. 2.

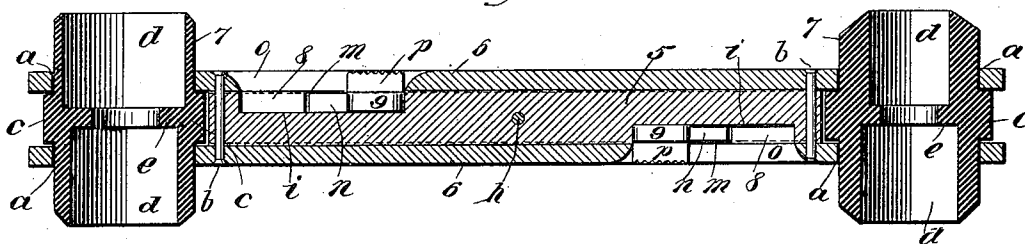


Fig. 3,

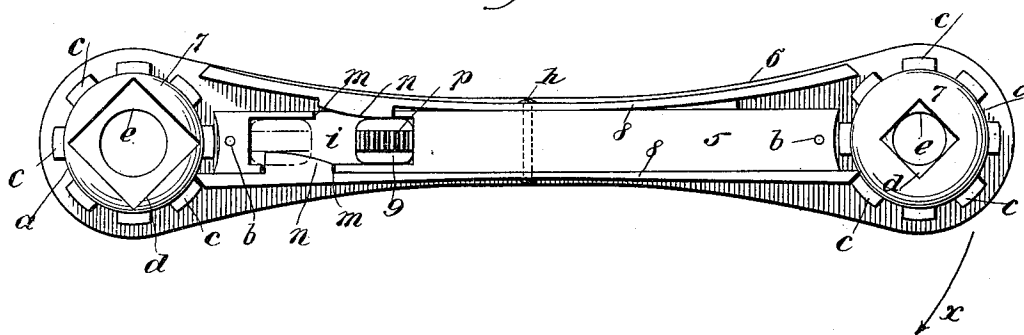


Fig.4.



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REVERSIBLE WRENCH.

SPECIFICATION forming part of Letters Patent No. 663,294, dated December 4, 1900.

Application filed July 5, 1900. Serial No. 22,571. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. NESLEY, a citizen of the United States, and a resident of Grant, in the county of Beaver Head and State of Montana, have invented a new and Improved Reversible Wrench, of which the following is a full, clear, and exact description.

The object of this invention is to provide a lever-wrench with novel features of construction which adapt the implement to be adjusted for service as a right-hand or left-hand wrench without removal from a nut or bolt head instantly and while the wrench is in use and also to provide a similarly-constructed wrench-head at each end of the wrench-body.

The invention consists in the novel features of 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 plan view of the improved wrench. Fig. 2 is a longitudinal sectional view of the same, taken on the line 2 2 in Fig. 1. Fig. 3 is a plan view of the tool with one side plate removed, and Fig. 4 is a perspective view of a slide-block employed.

In the drawings, which illustrate the features of invention, 5 indicates the lever-body of the wrench, consisting, essentially, of a metallic bar rectangular in cross-section and parallel on opposite sides, the ends thereof being concaved, as shown in Fig. 3. Two similar plates 6 6 form the top and bottom walls of the wrench-body and are of somewhat greater width than the lever-bar 5. The plates 6 6 are gradually widened from their longitudinal centers and are concaved on their side edges, each end thereof being peripherally rounded. A central circular aperture *a* is formed in each plate 6, at each end of the same, and the length of said plates permits their apertured end portions to extend beyond the concaved ends of the bar 5 when in place thereon.

The side plates 6 6 are secured oppositely on the lever-bar 5 by screws or rivets *b b*, which pass through perforations formed in the plates and lever-bar near their ends and at their longitudinal centers. At each end of

the wrench a head-block 7 is loosely held in place between the ends of the plates 6, each head-block being constructed as follows: A metallic block of suitable length is provided with a peripheral row of evenly-spaced teeth *c*, which project equally from the round body of the block at its longitudinal center. The teeth *c* are in the form of similar projections convexed on their outer edges and having the ends of each tooth parallel with each other, the teeth having spaces between them sufficient to freely receive the free ends of the spring-pawls 8, which will be hereinafter described.

The teeth *c* fit loosely between the projecting ends of the plates 6, and the end portions of each head-block 7, which extend oppositely from said teeth, are exteriorly cylindrical and of a diameter that adapts the head-block to loosely engage said end portions within the apertures *a* of the side plates 6 6 and be rotatably held therein, the teeth *c* having clearance from the ends of the bar 5, as shown in Figs. 2 and 3. The head-blocks 7 are each axially perforated to form sockets therein, said sockets *d*, which are angular in contour, being separated in each head-block by a perforated partition-wall *e*.

In the spaces formed on the sides of the wrench by the excess in width of the top and bottom plates 6 as compared with that of the lever-bar 5 the similar pawls 8 8 are seated. Each pawl 8 consists of an elongated strip of elastic metal which is parallel on the side edges, fits loosely between the projecting edges of the plates 6 6, and gradually increases in thickness from the center to the ends, the latter being sloped to adapt the toes thus formed to bear properly against the teeth *c* successively when the wrench is in service, as will be further explained.

The pawls 8 8 are flat on the sides which engage with the bar 5 and normally have contact therewith throughout the length of said lever-bar. Preferably the pawls 8 are secured in place by a single rivet *h* at their center of length, which permits their end portions to vibrate elastically when the pawls are actuated, as will hereinafter be described. Near each end of the lever-bar 5 a cavity *i* is formed therein, said cavities being on opposite sides of the bar, as shown in Fig. 2.

In the side walls of each cavity *i* two openings *m* are formed, one nearer the adjacent end of the lever-bar than the other.

Upon the inner side of each of the pawls 8, at a suitable distance from each end thereof, a cam projection *n* is formed, which is so positioned as to freely pass into a respective opening *m* when the pawl is flat upon the lever-bar 5. A longitudinal slot *o* is formed in each plate 6 over a respective cavity *i* and having less width than said cavity. A keeper-block 9 is held to slide in each cavity *i*, the side walls of said block loosely contacting with the parallel sides of the cavity, and a flange *p* on each keeper-block projects up in a respective slot *o*, so that its upper face is nearly flush with the outer face of the plate 6, with which it loosely engages, the top surface of each flange *p* being serrated transversely to facilitate the sliding movement of the keeper-block by the hand of the user of the wrench.

The cam projections *n* on opposite ends of the pawls 8 are sloped in a proper direction on their faces to adapt them for free contact with the rounded ends of the keeper-block at that end of the wrench, and it will be seen that the keeper-block will engage with and press outwardly one cam projection and pawl when the keeper-block is moved completely to the inner end of the slot *o*, thereby removing the toe of the pawl thus pressed from contact with the teeth *c* on the head-block, between which the pawl-toe normally rests, as shown in Fig. 3. The inward-sliding movement of the keeper-block 9 at the same time removes the block from contact with the cam projection *n* upon the opposite pawl, which permits the released pawl to spring back into normal engagement with the lever-bar 5. The movement of the toe of the pawl which has been released, as explained, locates it between two of the teeth *c* on the adjacent head-block 7.

The sockets *d*, formed in the head-blocks 7, are shown square in form to receive a correspondingly-shaped nut or bolt head; but it is obvious that they may be hexagonal or octagonal in contour, if these shapes for the sockets are preferred. As shown, the sockets *d* are graded in size to adapt them for the reception of different-sized heads or nuts on screw-bolts.

In operation it will be seen that either socket *d* in either head-block 7 may be applied upon a screw-nut on a bolt or upon the head of a bolt, and in case a nut is thus engaged which is so positioned on the bolt-body that a part of the latter projects from the outer face of the nut this projecting end of the bolt may pass into and through the central hole in the partition *e* and allow the nut to fairly enter the socket. If the nut is thus engaged and the keeper-block 9 at the engaged end of the wrench is adjusted to locate it at the inner end of the slot *o*, as shown in Fig. 3, it will be seen that a lateral pull on the wrench in the direction of the arrow *x* in

Fig. 3 will screw the nut farther upon the screw-bolt, as the vibratory movement of the wrench-body will give to the engaged head-block 7 a step-by-step rotatable movement owing to the engagement successively of the pawl-toe that is positioned between the teeth *c* with said teeth.

In case it is necessary to unscrew the nut on a bolt the action of the wrench may be instantly reversed by sliding the keeper-block 9 toward the head-block 7, as this movement will release the pawl which has previously been forced away from the teeth *c*, so that the toe on the pawl will be moved toward and between two of said teeth, owing to the resilience of the pawl 8, and at the same time the cam projection *n* on the opposite pawl 8 will be pressed out from the teeth of the head-block by an engagement of the keeper-block 9 therewith.

The provision of two rotatable head-blocks 7, one at each end of the lever-wrench, is of advantage, as a number of different-sized nuts or bolt-heads may be operated upon by the tool, which is thus adapted for a wide range of work.

The wrench may be operated in any position in either direction, so as to screw up or unscrew a nut or bolt by simply sliding the keeper-block at the engaged end of the wrench, and this can be effected instantly by slight effort either with the thumb or finger of the operator while gripping the wrench. The spring-pawls may be formed of light material, as applied force presses them down upon the lever-bar 5, and but a short toe projects beyond the end of the bar, so that the pawls are reinforced and rendered very durable by their peculiar construction and arrangement.

The provision of the slidable keeper-block for each end of the wrench, adapted by its reciprocation to change the bite of the pawls alternately as the block is moved longitudinally, and thus change the direction of rotation given to the head-block of the wrench in a simple and reliable manner, is a coacting feature of the improvement which adds to its efficiency.

The construction of the wrench-body with a central lever-bar and top and bottom plates attached oppositely thereon having greater width than the bar and projecting their apertured ends beyond the ends of the lever-bar for a rotatable support of the socketed head-blocks, one at each end of the wrench, provides a simple novel construction for a double-headed wrench which is compact, easy to manufacture, and enables the production of the wrench at a low cost.

The construction of the pawls for the two head-blocks of the wrench in strips which are resilient and each having a toe on each end to engage with the series of teeth on each head-block and the location of the said pawls in the recesses formed at opposite sides of the wrench-body by the increased width of the top and bottom plates 6 6 as compared

with that of the lever-bar 5 affords a neat, strong, durable, and cheap wrench that has no projecting parts liable to injury from hard usage, to which such implements are subjected.

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

1. In a wrench, the combination with a lever-bar, side plates thereon oppositely and circularly apertured at one end, and a socketed and peripherally-toothed head-block held to rotate in said apertures, of two elongated resilient pawls, toes on which mesh oppositely in teeth on the head-block, and a keeper-block slidable on one side plate, adapted by longitudinal movement to disengage the pawls alternately.

2. In a wrench, the combination with a lever-bar, side plates thereon, oppositely and circularly apertured at one end, and a peripherally-toothed head-block socketed in opposite ends and held to rotate in the circular apertures, of two elongated resilient pawls each having a cam projection, toes on said pawls oppositely engaging teeth of the head-block, and a keeper-block slidable in a slot

in one side plate, and contacting with the cams alternately, so as to lift the pawl bearing this cam, and remove the pawl from engagement with the teeth of the head-block.

3. In a wrench, the combination with a lever-bar, and side plates secured thereon, said plates having one end of each circularly apertured, of a socketed head-block held to rotate in said apertures, a series of teeth on the head-block located between the apertured ends of the side plates, one of the plates having a slot therein, two resilient pawls secured oppositely on the lever-bar, toes thereon engaging with teeth of the head-block, a cam projection on each pawl, and a keeper-block held to slide in the slot of the side plate, said block alternately pressing outward a pawl and relieving it from engagement with the teeth on the head-block when the keeper-block is reciprocated.

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

JOSEPH M. NESLEY.

Witnesses:

WILLIAM H. McMANNIS,
XAVIER RENSIS.