

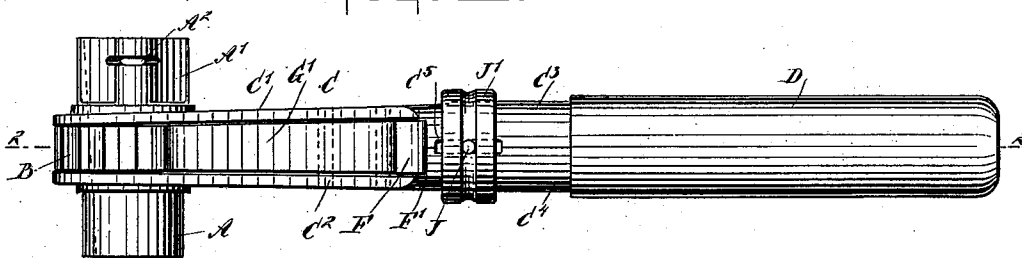
(No Model.)

E. M. TYLER.
REVERSIBLE RATCHET WRENCH.

No. 603,159.

Patented Apr. 26, 1898.

Fig. 1.



Tig. 2.

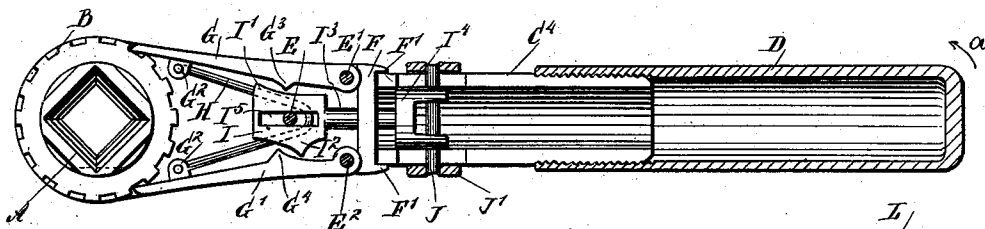


Fig. 3.

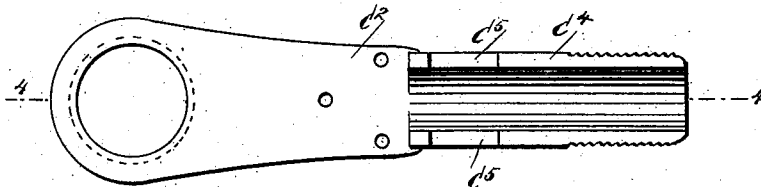


Fig. 4.

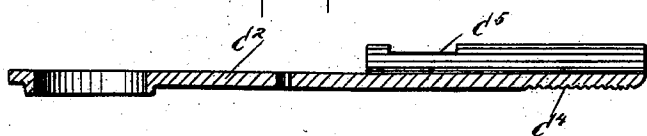
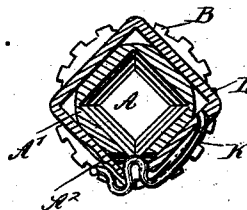


Fig. 6.



WITNESSES :

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ELIAS M. TYLER, OF AUBURN, CALIFORNIA.

REVERSIBLE RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 603,159, dated April 26, 1898.

Application filed October 7, 1897. Serial No. 654,378. (No model.)

To all whom it may concern:

Be it known that I, ELIAS M. TYLER, of Auburn, in the county of Placer and State of California, have invented a new and Improved Reversible Ratchet-Wrench, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved reversible ratchet-wrench which is simple and durable in construction and readily applied on nuts and other objects for conveniently turning the same in either direction.

The invention consists of a socket provided with a ratchet-wheel engaged at opposite sides by pawls formed with inclines and a movable cam-block under the control of the operator and provided with cam-faces for engagement with the said inclines to throw either of the said pawls out of mesh with each other.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the 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 side elevation of the improvement. Fig. 2 is a sectional plan view of the same on the line 2 2 of Fig. 1. Fig. 3 is a plan view of part of the casing. Fig. 4 is a sectional side elevation of the same on the line 4 4 of Fig. 3. Fig. 5 is a side elevation of the ratchet-wheel socket with an auxiliary socket attached, and Fig. 6 is a sectional plan view of the same on the line 6 6 of Fig. 5.

The improved reversible ratchet-wrench is provided with a socket A, on which is formed or secured a ratchet-wheel B, and the said socket A is mounted to turn in a casing C, provided with two plates C' C², formed at their rear ends with half-round extensions C³ C⁴, on which screws a handle D for securely holding the parts of the casing in position with the ratchet-wheel B between the plates C' C². Suitable rivets E E' E² are also employed for connecting the plates C' C² with each other, and a clamp F is also used in conjunction between the plates C' C² and their half-round extensions C³ C⁴ to securely connect the casing parts with each other, the said clamp F being provided for this purpose with

lugs F', passing over the adjacent edges of the said extensions C³ C⁴, as will be readily understood by reference to Figs. 1 and 2.

On the two rivets E' E² and between the plates C' C² are fulcrumed pawls G G', in mesh with the ratchet-wheel B at opposite sides, as is plainly indicated in Fig. 2. The pawls G G' are pressed in engagement with the teeth of the ratchet-wheel B by a spring H, preferably made V-shaped and connected at its ends with lugs G², secured near the free ends of the pawls G G' and at the inner faces thereof, as indicated in Fig. 2.

On the opposed faces of the pawls G G' are formed inclines G³ G⁴, respectively, adapted to be engaged by cam-faces I' I² on a block I, fitted to slide longitudinally in the casing and arranged so that either the cam-face I' engages the incline G³ or the cam-face I² engages the incline G⁴, it being expressly understood that when such engagement takes place by one cam-face the other cam-face is out of engagement with its incline.

The cam-block I is provided with a stem I³, extending rearwardly through the clamp F and formed with a head I⁴, fitted to slide in an opening formed by the two half-round extensions C³ C⁴ of the casing, and the said head I⁴ is engaged by a transversely-extending pin J, passing through slots C⁵ in the handle-casing, to connect with a ring or collar J', fitted to slide on the cylindrical extension parts C³ C⁴ of the casing.

The block I is formed with a slot I⁵ for the passage of the rivet E, which thus serves as a guide for the said block I, said block being also slotted laterally for the passage of the middle portion of the spring H, so as to hold the latter in place within the casing.

By the arrangement described the operator can readily push the ring forward, so as to move the block I in a like direction and to cause the cam-face I² thereof to move in engagement with the incline G⁴ to press the pawl G' outward out of mesh with the ratchet-wheel B. The other pawl G remains in mesh during this operation, and when the ratchet-wrench is now applied and swung in the direction of the arrow a' then the ratchet-wheel B and the socket A are turned in the same direction; but on the return stroke of the handle D the pawl G will glide over the teeth

of the ratchet-wheel B. When it is desired to turn the object in engagement with the socket A in the opposite direction, then the operator slides the collar or ring J' rearwardly to move the cam-face I² out of engagement with the incline G¹ to allow the pawl G' to again move in mesh with the ratchet-wheel B. At the same time the rearward movement of the block I brings the cam-face I' in engagement with the incline G³, so that the pawl G is swung outward out of mesh with the ratchet-wheel B. Now when the handle D is swung in the direction of the arrow a' the pawl G' glides over the teeth of the ratchet-wheel; but upon moving the handle in the inverse direction of the arrow a' the pawl G' turns the ratchet-wheel B and with it the socket A and the object grasped thereby.

In order to relieve the rivets E' E² of the strain incident to the pawls pushing the ratchet-wheel B, I rest the fulcrumed ends of the said pawls in seats on the clamp F, so that the latter takes up the strain instead of the rivets. The lugs F' of the clamp F also serve to limit the forward sliding motion of the ring or collar J' when the latter is shifted for throwing either of the pawls in or out of mesh, as above mentioned.

If it is desired to use an auxiliary socket for large objects, I provide one end A' of the socket A with the slot A², adapted to be engaged by a spring K, held on an auxiliary socket L, fitting over the polygonal end A' of the socket A. By this arrangement the auxiliary socket L is securely held in place on the said end A' of the socket A.

It will be seen by the arrangement described a ratchet-wrench of very simple and durable construction is produced, the wrench not being liable to get out of order.

It will further be seen that the operator can readily manipulate the ring or collar J' for making the wrench reversible, according to the direction in which the object is to be turned.

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

1. A reversible ratchet-wrench, provided with a socket having a ratchet-wheel, spring-pressed pawls engaging the said wheel at opposite sides, the pawls being provided on their

inner faces with inclines, and a cam-block mounted between and to slide longitudinally of the pawls to alternately engage them, and arms attached to the cam-block and engageable by the operator, substantially as described.

2. A reversible ratchet-wrench comprising a casing, a socket mounted to turn in the said casing and provided with a ratchet-wheel, spring-pressed pawls for engagement with the ratchet-wheel at opposite sides, the pawls being pivoted in the said casing and provided at their inner faces with inclines, a movable cam-block within the said casing and provided with cam-faces, for engagement with the said inclines to throw either of the said pawls out of mesh with the ratchet-wheel, and a ring slidable on the said casing and connected with the said block, substantially as shown and described.

3. A reversible ratchet-wrench, provided with a socket having a ratchet-wheel, spring-pressed pawls engaging said wheel on opposite sides, the pawls being provided in their inner faces with inclines, a cam-block between the pawls and having a longitudinal slot, a pin passing through said slot, a rearward extension of said block having guiding contact with the handle, a cross-pin fixed to said extension and projecting outside the handle, and a ring fixed to said pin and surrounding the handle.

4. A reversible ratchet-wrench provided with a casing comprising two plates spaced apart and formed with semicylindrical extensions, a handle screwing on the said extensions, a clamp engaging the plates at the extensions, the said clamp being provided with lugs projecting over part of the cylindrical extensions, substantially as shown and described.

5. A reversible ratchet-wrench provided with a socket having a square end formed with a recess, and an auxiliary socket fitted upon the said end and carrying a spring for engagement with the said recess, substantially as shown and described.

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Witnesses:

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