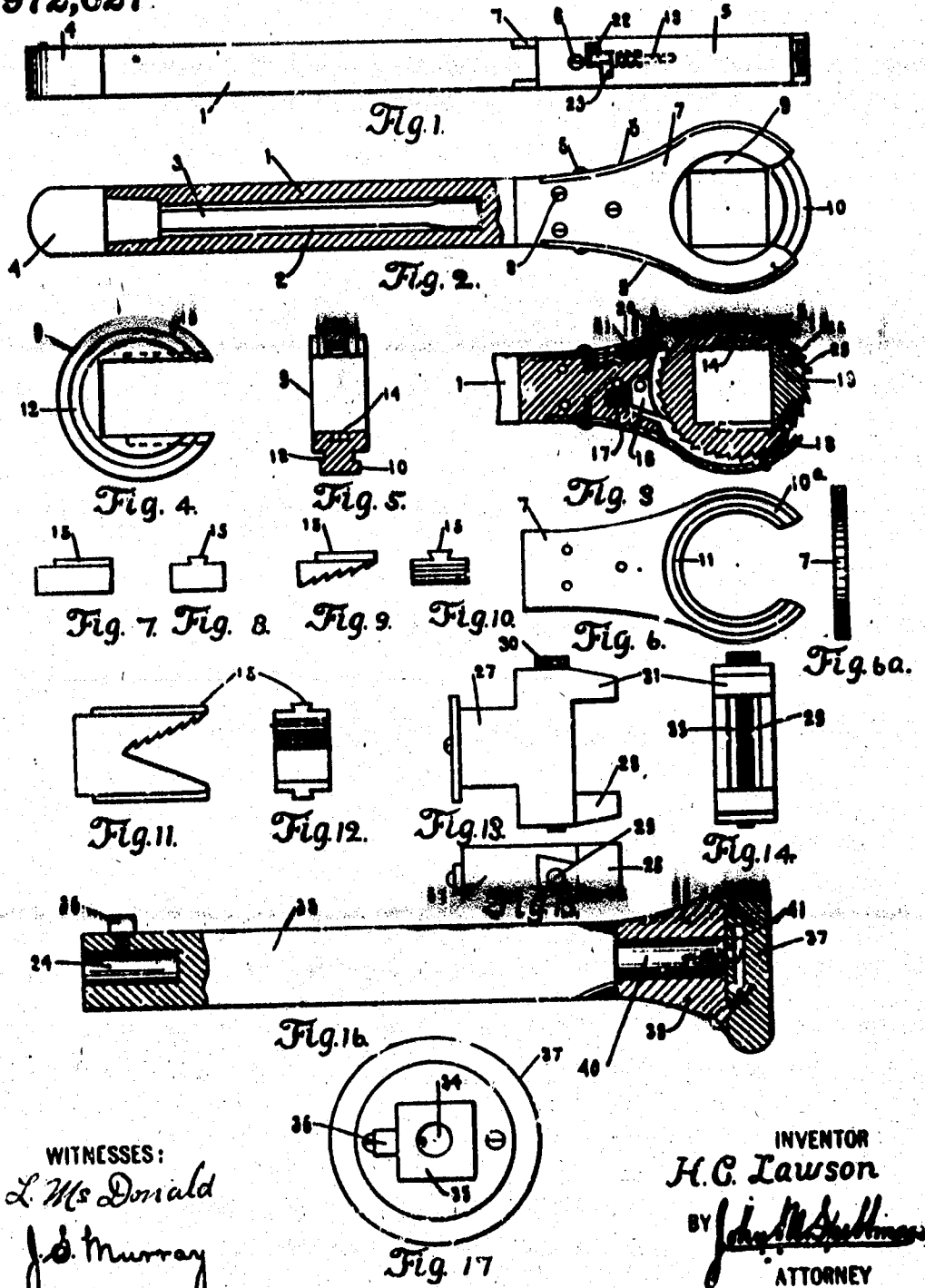


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 RATCHET WRENCH.
 APPLICATION FILED JULY 12, 1900.

972,627.

Patented Oct. 11, 1910.



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HARRY C. LAWSON, OF McOREGOR, TEXAS.

RATCHET-WRENCH.

972,627.

Specification of Letters Patent.

Patented Oct. 11, 1910.

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To all whom it may concern:

Be it known that I, HARRY C. LAWSON, a citizen of the United States, residing at McGregor, in the county of McLennan and State of Texas, have invented certain new and useful Improvements in Ratchet-Wrenches, of which the following is a specification.

My invention relates to new and useful improvements in ratchet wrenches, and has for its object to provide a wrench that may be readily operated in inaccessible places, where it is impossible to remove the wrench from the nut to secure a new grip thereon.

Another object of my invention is to provide a device of the character described that will be strong, durable, simple and efficient and comparatively easy to produce, and also one in which the various parts will not be likely to get out of working order.

With these and various other objects in view, my invention has relation to certain novel features of construction and operation, an example of which is described in the following specification and illustrated in the accompanying drawing, wherein:

Figure 1 is a longitudinal side elevation of the wrench. Fig. 2 is a top view thereof, with the handle portion broken away to show the screw driver pocketed therein. Fig. 3 is a longitudinal sectional view taken through the head of the wrench, showing the operating mechanism thereof, including the pawls and the ratchet operated thereby, and the locking pins whereby the removable portion of the ratchet is held in place. Fig. 4 is a side view of the ratchet with its removable portion omitted. Fig. 5 is a transverse view of the same, the lower portion being in section. Fig. 6 is a side view of one of the removable guide plates which are adapted to attach at each side of the head of the wrench, the view being taken from the inside thereof. Fig. 6 is a transverse sectional elevation of the same. Figs. 7 and 8 are side and end views, respectively, of a rectangular block, provided with an undercut tongue adapted to slide into a groove at one side of the square, central aperture of the ratchet. Figs. 9 and 10 are a side and end view, respectively, of a toothed jaw adapted to be introduced into the ratchet at one side of the square central aperture, similarly to the aforementioned block. Figs. 11 and 12 are side and end views, respectively, of a rectangular block having a V-shaped

aperture at one of its extremities, one side of which is serrated, tongues being provided laterally to this block, adapting it to be introduced into the central aperture of the ratchet, similarly to the block and jaw described previously. Fig. 13 is another attachment, having a pair of adjustable wrench jaws, and a square shank adapted to be introduced transversely into the central aperture of the ratchet. Figs. 14 and 15 are end and side views, respectively, of the same. Figs. 16 and 17 are side and end views, respectively, of a square brace, adapted to be introduced into the central aperture of the ratchet transversely thereof, a socket being provided at one extremity to receive a bit, and a handle at the other. Fig. 18 is shown in partial section to make clear its interior construction.

Referring now more particularly to the drawings, the numeral 1 denotes the shank or handle of the wrench, and 2 a longitudinal recess therein adapted to receive the screw driver 3. A cap 4 upon the extremity of the screw driver projects from the recess, its surfaces coming flush with those of the handle 1.

The sides of the handle 1 at the extremity thereof adjacent to the head of the tool are provided with shoulders. The narrower pair of these sides are curved slightly outward from the shoulders thereupon, and curved plates 5 are attached to the curved portions by screws 6, the inner extremities of these plates abutting against the shoulders and their outer extremities being curved in circular arcs. Upon the other two sides of the forward portion of the shank 1, abutting against the shoulders thereupon, are attached the two guide plates 7 by means of the screws 8. A cylindrical recess is thus formed in the head of the tool by the two sets of plates 5 and 7, and the ratchet 9 is rotatably mounted within this recess. The ratchet is guided in its rotation by the introduction of circular tongues 10 upon its sides, into the grooves 10^a of the guide plates, and by the introduction of the tongues 11 of the guide plates into the grooves 12 upon the sides of the ratchet.

The ratchet is preferably to be constructed with one side open, a closure 13 being adapted to fit into the open side when required. However, the invention includes the idea of using a solid ratchet with a central aperture, as shown in Fig. 2.

Undercut grooves 14 extend centrally into the parallel sides of the central aperture, these grooves being adapted to receive tongues 15 of corresponding shape carried by the various attachments hereinafter described.

A dog 16 is pivoted in the head portion of the shank and is acted on by a spring 17, tending to hold it in engagement with the ratchet wheel. Spring pawls 18 are attached to the extremities of the plates 5, and are also adapted to engage the teeth of the ratchet wheel. The use of these additional pawls 18 strengthens the device and also furnishes means of rotating the ratchet when the open portion thereof is adjacent to the dog 16.

The locking-key 19 is mounted in a cylindrical recess in the head-portion of the shank. This key is adapted to enter an aperture 20 in the face of the ratchet and is normally restrained from entering the same by a coiled spring 21. The outer extremity of this key is provided with a laterally extending arm 22, which arm is adapted to be turned into either of two grooves 3 provided for that purpose in the plate 5. The ratchet closure is provided with locking-pins 23 packed therein, and coiled springs 26 encircling these pins tend to normally hold them in their locked position.

I am aware that changes may be made in the form and proportion of parts and details of the device herein described, and shown as a preferable embodiment of my invention, without departing from the spirit

or sacrificing the advantages thereof, and I therefore reserve the right to make such changes and alterations in said device as fairly comes within its scope.

What I claim, is:

In a ratchet wrench the combination with the shank thereof, of four plates attached to the shank extremity forming by their juncture a circular recess, a ratchet rotatably mounted in the circular recess and having tongue and groove connection between its sides and the adjacent plates, said ratchet being provided with a transverse slot extending centrally thereinto, having undercut grooves in its sides, a ratchet segment provided with tongues at each extremity adapting it to enter the slot of said ratchet to complete the circle thereof, means for securing said segment in a position such that its teeth are flush with the ratchet teeth, spring pawls secured to opposite plates forming the ratchet inclosure, and engaging the ratchet teeth, a spring pressed dog pivotally mounted in the shank extremity and engaging the ratchet teeth, and a pin slidably mounted in the shank extremity, adapted to enter a cavity in the ratchet face to lock the same against rotation.

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

HARRY C. LAWSON.

Witnesses:

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