(No Model.)

E. C. WEBSTER.

RATCHET WRENCH.

No. 597,043. Patented Jan. 11, 1898.

Fig. 1

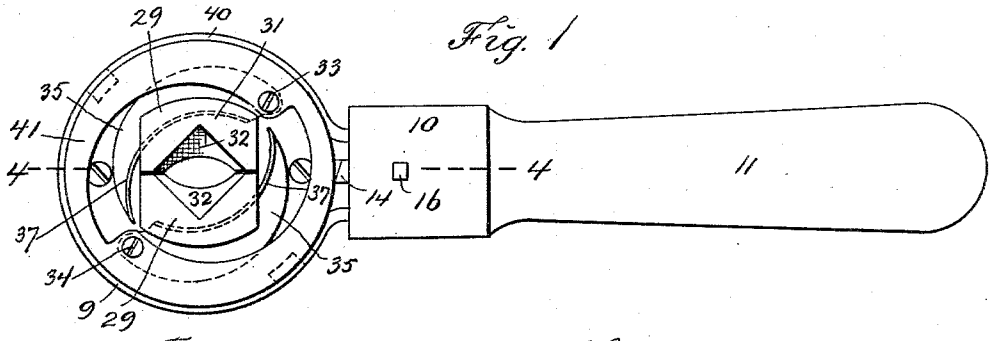


Fig. 3

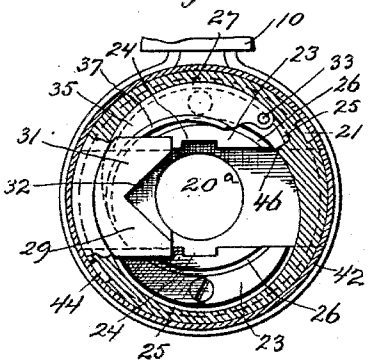


Fig. 4

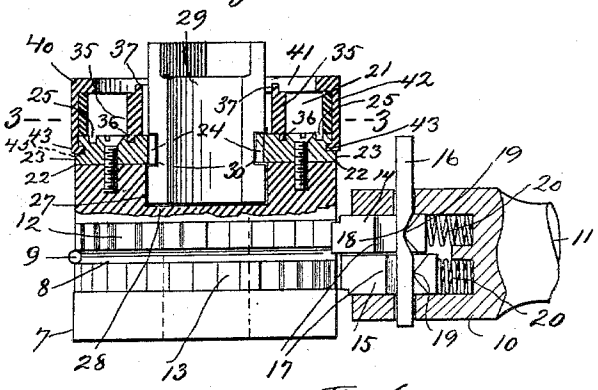


Fig. 5

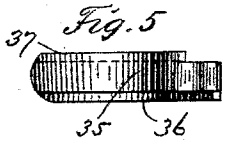


Fig. 6.

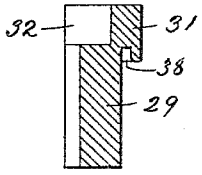
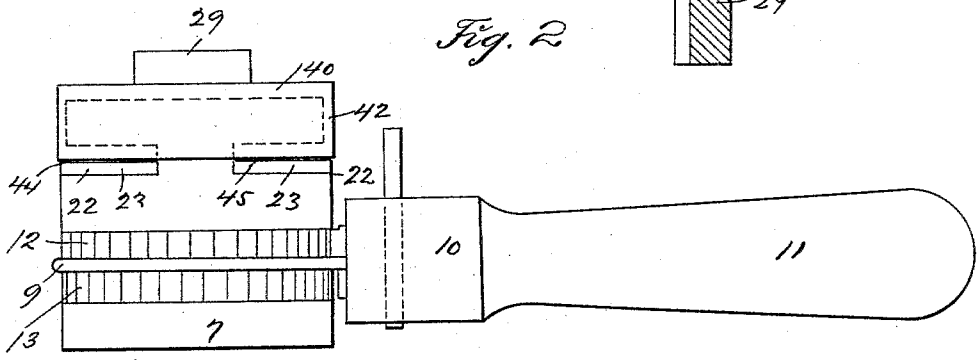


Fig. 2



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RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 597,043, dated January 11, 1898.

Application filed May 22, 1897. Serial No. 637,738. (No model.)

To all whom it may concern:

Be it known that I, EDWARD CHARLES WEBSTER, a citizen of the United States, residing at East Shoreham, in the county of Addison and State of Vermont, have invented certain new and useful Improvements in Ratchet-Wrenches, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to ratchet-wrenches; and the object thereof is to provide an improved wrench of this class which is provided with a ratchet head or cylinder, in one end of which are mounted transversely-movable jaws, said ratchet head or cylinder being also provided with a handle which is revoluble thereon and which is provided with spring-operated pawls, by means of which the ratchet head or cylinder may be revolved or turned in either direction.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a plan view of my improved wrench; Fig. 2, a side view thereof; Fig. 3, a partial section on the line 3 3 of Fig. 4; Fig. 4, a partial section on the line 4 4 of Fig. 1; Fig. 5, a side view of a dog which forms a part of the operative mechanism of my improved wrench, and Fig. 6 a central vertical section of one of the transversely-movable jaws.

In the drawings forming part of this specification the separate parts of my improvement are designated by the same numerals of reference in each of the views.

In the practice of my invention I provide a cylinder or head 7, which is provided with an annular groove 8, which is adapted to receive a ring 9, which is connected with the head 10 of the handle 11.

Formed on the cylinder or head 7 of the wrench at each side of the groove 8, in which the ring 9 is mounted, are circular rows of ratchet-teeth 12 and 13, the ratchet-teeth 12 being inclined in one direction and the ratchet-teeth 13 being inclined in the opposite direction, and mounted in the head 10 of the handle 11 are two spring-operated pawls 14 and 15, in each of which is formed a transverse slot or groove, through which passes a bolt 16, which is angular in cross-section and which passes transversely through the head 10 of the handle 11. The pawls 14 and 15 are provided in one side thereof with a transverse notch or recess 17, through which the bolt 16 passes. Said bolt 16 is provided in the side thereof adjacent to the handle 11 with a notch or recess 18, and the pawls 14 and 15 are each provided with corresponding wedge-shaped portions 19, which are adapted to enter said notch or recess 18. The springs by which the pawls 14 and 15 are operated are shown at 20, said springs serving to force said pawls in the direction of the head or cylinder 7, and the ends of said pawls adjacent to the cylinder or head 7 are beveled in the opposite direction, so as to engage with the ratchet-teeth 12 and 13 on said cylinder or head. By means of this construction when the bolt 16 is in the position shown in Fig. 4 the pawl 14 will be in operation, and the head or cylinder 7 may be operated to the left by simply swinging the handle 11 back and forth in a horizontal plane, and when said bolt 16 is depressed, so that the wedge-shaped portions 19 of the pawl 15 will engage with the notch or recess 18 in said bolt, said pawl 15 will be in operation, and the cylinder or head 7 may be turned to the right by swinging the handle 11 back and forth in a horizontal plane. It will be understood that when one of said pawls is in operative connection with the ratchet-teeth 12 or 13 the other is not in such connection.

The cylinder or head 7 is provided with a central longitudinal bore 20^a, which is shown in Fig. 3 and in dotted lines in Fig. 4, and around the said central longitudinal bore at one end of said cylinder or head (the upper end as shown in the drawings) is formed an annular chamber 21, and said cylinder or head is provided at its opposite sides with transverse slots or grooves 22, in which are placed plates 23, the outer sides of which are circular in form and the inner sides of which are straight and provided centrally with angular notches or recesses 24, and said plates 23 are each provided with two circular grooves 25 and 26, one of which is arranged within the other.

That end of the central bore 20^a around which the chamber 21 is formed is enlarged,

as shown at 27, so as to form a shoulder 28. Said enlarged portion of said central bore is extended transversely, and mounted in the chamber thus formed are the transversely-movable jaws 29, and these jaws 29 are provided in their opposite sides with notches or recesses 30 and with heads 31, the outer sides of which are circular or segmental in form, as shown in Figs. 1 and 3, and these heads are provided in their inner sides with angular notches or recesses 32, which are adapted to receive a nut.

The notches or recesses 24 in the inner edges of the plates 23 are intended to permit of the passage of the sides of the jaws 29 when said jaws are inserted into position, and the notches or recesses 30 in the sides of said jaws are intended to permit said jaws to turn between said plates.

Pivotally connected with each of the plates 23 at 33 and 34 are segmental and pointed dogs 35, which project in opposite directions and one of which is shown in Fig. 5, and the under side of these dogs is provided with a downwardly-directed flange 36 and the upper side thereof with an upwardly-directed flange 37.

The outer groove 25 in one of the plates 23 and the inner groove 26 in the other plate form arcs of the same circle, so that when extended they will form a complete circle, and the bottom flange 36 on one of the dogs 35 is adapted to move in the outer groove 25, formed in one of said plates, and the inner groove 26, formed in the other, and the upper flanges 37, formed on said dogs, are adapted to move in corresponding circular grooves 38, formed in the under sides of the heads 31 of the movable jaws 29.

I also provide a detachable cap or cover 40, which is provided with an inwardly-directed flange or rim 41, through which the pivot screws or bolts 33 and 34 of the dogs 35 pass, and said cap is provided with a depending annular flange 42, which is provided at its opposite sides and at the lower edge thereof with lugs or projections 43, which when said cap is placed in position pass downwardly through vertical grooves 44, formed in the opposite sides of the outer wall of the annular chamber 21, and the plates 23 are provided in their outer sides with corresponding grooves 45, with which said grooves 44 communicate, and this construction forms a bayonet-joint by which the cap 40 is held in place when said cap 40 is revolved on the cylinder or head 7.

As thus constructed it will be seen that by moving the handle 11 back and forth in a horizontal plane the cylinder or head 7 may be caused to turn in either direction, the direction of the movement of the cylinder or head depending upon which of the pawls 14 and 15 is in operation, and as said cylinder or head is turned in one direction the jaws 29 will be separated and when turned in the opposite direction said jaws will be brought together, this operation being accomplished by means of the dogs 35, and the object of separating said jaws is to provide means for enabling the device to operate on nuts or bolts of different sizes.

The plates 23 form the bottom of the annular chamber 21 at the opposite sides thereof, and in Fig. 3 the cap 40 is removed, together with one of the jaws 29 and one of the dogs 35, in order to better show the plates 23 and the parts connected therewith, and the side walls of the enlarged chamber 27 in which said jaws are mounted are elliptical in form and provided with inwardly-directed shoulders or projections 46, which are formed therein adjacent to the pivotal points of the dogs 35.

My improvement is simple in construction and operation and is perfectly adapted to accomplish the result for which it is intended, and it will be apparent that changes in and modifications of the construction herein described may be made without departing from the spirit of my invention or sacrificing its advantages.

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

1. A ratchet-wrench comprising a cylindrical wrench-head in which is formed an annular groove, said wrench-head being provided at each side of said groove with a circular row of ratchet-teeth which project in opposite directions, a handle connected with said wrench-head by means of a ring which is secured to said handle, and which fits in said groove, spring-operated pawls mounted in the end of said handle and adapted to engage with said ratchet-teeth on the opposite side of said groove, said pawls being also provided with means for throwing either thereof into or out of operation, transversely-movable jaws mounted in one end of said wrench-head, and around which is formed an annular chamber, and pivoted dogs mounted in said chamber, said dogs being provided on their under or inner sides with circular flanges which move in corresponding grooves formed in the bottom of said annular chamber, and on their upper or outer sides with circular flanges which move in corresponding grooves formed in the heads of said jaws, substantially as shown and described.

2. A ratchet-wrench comprising a cylindrical wrench-head in which is formed an annular groove, said wrench-head being provided at each side of said groove with a circular row of ratchet-teeth which project in opposite directions, a handle connected with said wrench-head by means of a ring which is secured to said handle, and which fits in said groove, spring-operated pawls mounted in the end of said handle and adapted to engage with said ratchet-teeth on the opposite side of said groove, said pawls being also provided with means for throwing either thereof into or out of operation, transversely-movable jaws mounted in one end of said wrench-head, and

around which is formed an annular chamber, and pivoted dogs mounted in said chamber, said dogs being provided on their under or inner sides with circular flanges which move in corresponding grooves formed in the bottom of said annular chamber, and on their upper or outer sides with circular flanges which move in corresponding grooves formed in the heads of said jaws and said wrench-head being also provided with a revoluble cap, substantially as shown and described.

3. A wrench comprising a cylindrical head 7, in which is formed an annular groove at each side of which is a row of ratchet-teeth, the ratchet-teeth on one side of said groove projecting in opposite directions from those on the other, a handle provided with a ring 9, which fits in said groove, and with spring-operated pawls 14, and 15, which operate in connection with said ratchet-teeth, transversely-movable jaws 29, mounted in one end of said wrench-head, and around which is formed an annular chamber 21, and pivoted dogs as 35, mounted in said annular chamber, said dogs being provided on their under or inner sides with flanges which operate in corresponding grooves formed in the bottom of said chamber, and on their upper or outer sides with flanges which operate in corresponding grooves formed in the heads of said jaws, said parts being constructed, combined and arranged, substantially as shown and described.

4. A wrench comprising a cylindrical head 7, in which is formed an annular groove at each side of which is a row of ratchet-teeth, the ratchet-teeth on one side of said groove projecting in opposite directions from those on the other, a handle provided with a ring 9, which fits in said groove, and with spring-operated pawls 14, and 15, which operate in connection with said ratchet-teeth, transversely-movable jaws 29, mounted in one end of said wrench-head, and around which is formed an annular chamber 21, and pivoted dogs 35, mounted in said annular chamber, said dogs being provided on their under or inner sides with flanges which operate in corresponding grooves formed in the bottom of said chamber, and on their upper or outer sides with flanges which operate in corresponding grooves formed in the heads of said jaws, and said wrench-head being also provided with a revoluble cap which is mounted thereon and which incloses said annular chamber and said jaws and with which said dogs are connected, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 10th day of May, 1897.

EDWARD CHARLES WEBSTER.

Witnesses:
HELEN J. WALKER,
GEORGE S. WALKER.