March 25, 1952 J. S. DODGE 2,590,387

REVERSIBLE RATCHET WRENCH

Filed Dec. 1, 1948

Fig. 1.

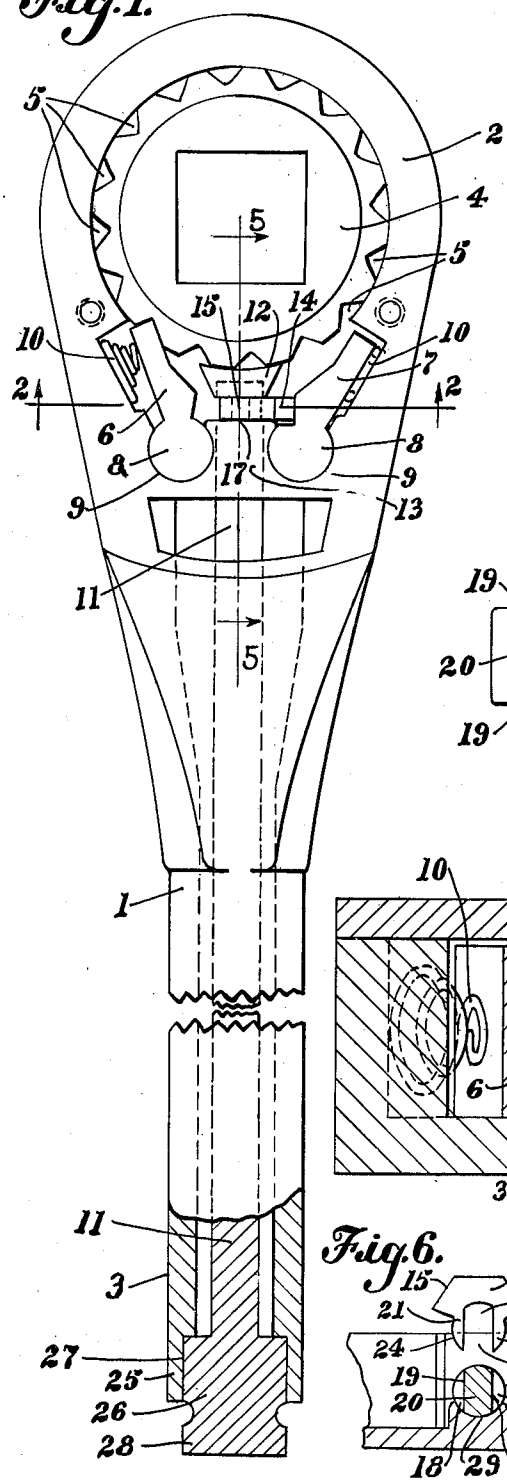


Fig. 5.

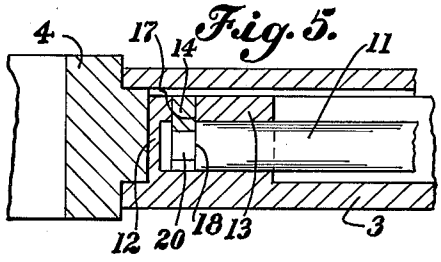


Fig. 4.

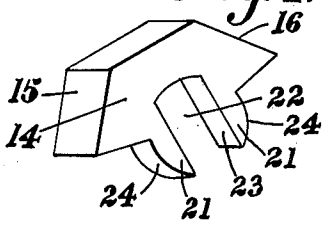


Fig. 3.

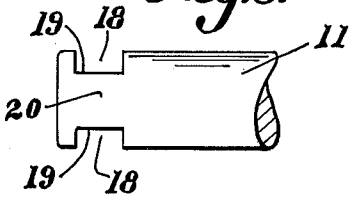


Fig. 2.

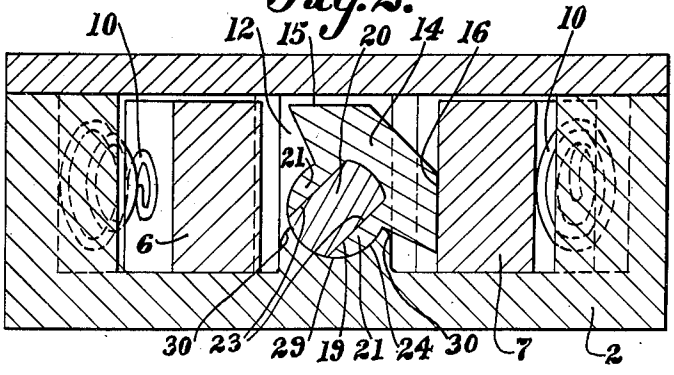


Fig. 6.

INVENTOR.
JOHN S. DODGE
BY Heard Smith & Clement
Attorneys

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REVERSIBLE RATCHET WRENCH

John S. Dodge, Exeter, N. H., assignor to Lowell Wrench Company, Worcester, Mass., a corporation of Massachusetts

Application December 1, 1948, Serial No. 62,953

1 Claim. (Cl. 81—62)

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This invention relates to reversible ratchet wrenches and is in the nature of an improvement on the structure shown in my Patent No. 2,003,346, June 4, 1935.

The wrench illustrated in said patent is of that type comprising a body member having at one end a handle portion and at the other a socket-receiving portion in which is rotatably mounted the socket member and which also includes two oppositely disposed spring pressed pawls cooperating with said socket member and a pawl-reversing member mounted on a shaft which extends longitudinally of the handle and by which the pawls are selectively rendered operative and inoperative.

One object of the present invention is to provide a reversible ratchet wrench of the above type having an improved and simplified pawl-reversing member which is constructed so as to facilitate its assembly with the other parts of the wrench and also to facilitate its removal from the wrench in case such removal is desired for replacement purposes.

Another object of the invention is to provide a novel and simplified way of mounting the pawl-reversing member on its operating shaft so that the pawl-reversing member constitutes the means to lock the shaft from movement in the direction of its length thereby obviating the necessity of providing additional means for this purpose.

A further object of the invention is to provide a reversible ratchet wrench of the type shown in my above mentioned Patent No. 2,003,346 which has a reduced number of parts and which, therefore, is simpler and less expensive to manufacture.

In order to give an understanding of the invention, I have illustrated in the drawings a selected embodiment thereof which will now be described, after which the novel features will be pointed out in the appended claim.

In the drawings,

Fig. 1 is a view of a reversible ratchet wrench embodying my invention with a portion of the handle broken out and with the cover plate removed.

Fig. 2 is an enlarged section on the line 2—2, Fig. 1.

Fig. 3 is a fragmentary view of the inner end of the shaft for operating the pawl-reversing member.

Fig. 4 is a perspective view of the pawl-reversing member.

Fig. 5 is a section on the line 5—5, Fig. 1.

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Fig. 6 is a fragmentary sectional view showing the portion of the shaft when the pawl-reversing member is being assembled therewith or removed therefrom.

My improved wrench has the usual body member 1 which presents at one end a socket-receiving portion 2 and at the other end a handle portion 3. A socket member 4 is rotatably mounted in the socket-receiving portion 2 of the wrench, and it is provided on its periphery with the usual pawl-receiving notches 5 that cooperate with the pawls 6 and 7, each pawl being provided at one end with a cylindrical bearing portion 8 which is received in a correspondingly shaped recess 9 in the socket-receiving portion. Each pawl is also backed by a spring 10 which tends normally to move it into its operative position in engagement with the socket member 4.

Extending lengthwise of the handle is a shaft 11, the inner end of which is journaled in the portions 12, 13 of the socket-receiving portion. Mounted on said shaft is a pawl-reversing member 14 which operates in a slot or opening 17 formed between the bearing portions 12 and 13 and is so constructed that by turning the shaft 11 in one direction one of the pawls will be thrown out of engagement with the socket member while the other pawl will be moved into its operative position, and by turning the shaft in the other direction, the position of the pawls will be reversed.

The pawl-reversing member is formed with two flat faces 15 and 16 with which the flat inner faces of the pawls have engagement when they are moved back into their inoperative position as shown in Fig. 2.

The parts thus far described, except for the way in which the pawl-reversing member is mounted on the shaft, are substantially the same as illustrated in my former Patent No. 2,003,346.

As stated above, one of the features of the present invention relates to the manner in which the pawl-reversing member 14 is constructed and mounted on the shaft 11 so as to facilitate the assembly of the parts and the removal of the pawl-reversing member, if such removal is desired for replacement purposes. The shaft 11 is provided near its inner end with two oppositely disposed notches or grooves 18, as shown in Fig. 3, thereby forming a neck portion 20 which, when the shaft is in operative position, registers with the open-sided slot 17. The bottoms 19 of the notches are flat and parallel.

The pawl-reversing member 14 is formed with

two leg portions 21 which provide between them an opening or slot 22 of a size to receive the neck 20 of the shaft 11. Such leg portions 21 have flat inner faces 23 which fit the flat faces 19 of the notches 18.

The legs 21 of the pawl-reversing member are so dimensioned that they fill the notches 18, and the outer walls 24 of said legs are curved to conform to the circumferential curvature of the shaft 11 so that when the pawl-reversing member is in position on the shaft, the outer curved surfaces 24 of the legs form a continuation of the curved surface of the shaft 11. Since the legs 21 of the pawl-reversing member are confined in the notches 18 of the shaft 11 and since the pawl-reversing member itself is confined in the transverse slot or opening 17, said pawl-reversing member serves to hold the shaft 11 from movement in the direction of its length and hence no means in addition the pawl-reversing member is required for this purpose.

The shaft 11 is assembled with the body portion of the wrench by inserting said shaft into the handle from the open end 25 thereof and entering the inner end of the shaft into the openings formed in the bearing portions 12, 13. The outer end of the shaft is provided with an enlarged portion 26 which fits into a counterbore 27 with which the end of the handle is provided and said enlarged end 27 of the shaft is provided with a knurled finger piece 28 that projects beyond the handle and by which the shaft may be turned.

In assembling the parts of the wrench the shaft is first inserted into the open end of the handle and positioned with its notches 18 in register with the slot 17, and then the shaft is turned into a midway position such as shown in Fig. 6, and while it is in this position, the pawl-reversing member 14 may be dropped into place in the opening or slot 17, with its legs 21 straddling the neck portion 20, this operation preferably being performed before the pawls are placed in position. The pawl-reversing member can also be easily removed by simply turning the shaft 11 into its mid-position and then lifting said member out of the slot 17. Furthermore, as stated above, no means other than the pawl-reversing member 14 is required to hold the shaft 11 in position and prevent it from moving in the direction of its length.

The bottom of the opening 17 between the bearing portions 12 and 13 is formed with a curved seat 29 on which the shaft rests and as the shaft is turned in one direction or the other, this seat 29 is also engaged by the curved faces 24 of the legs 21.

At the ends of the seat portion 29 are stop shoulders 30 with which the pawl-reversing member 14 engages when it is in either of its extreme operative positions as shown in Fig. 2.

I claim:

A reversible ratchet wrench having a body presenting a handle portion at one end and a socket-receiving portion at the other end, a socket member rotatable in the socket-receiving portion, two oppositely disposed spring pressed pawls cooperating with the socket member, a shaft extending longitudinally of the handle portion and having a bearing therein at each end thereof, said shaft having two oppositely disposed notches adjacent to but separated from the inner end thereof and which form between them a neck portion having flat parallel sides, a pawl-reversing member having two legs forming between them an open ended slot in which the neck portion of the shaft is received, said body having a slot in which the pawl reversing member is received, said pawl-reversing member being removable from or replaceable on said neck portion when the shaft has been turned into a position midway between its two extreme positions and while it is still in its operative position in an axial direction.

JOHN S. DODGE.

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