April 9, 1940. W. H. MONTGOMERY 2,196,223

TORQUE INDICATING WRENCH

Filed June 7, 1939

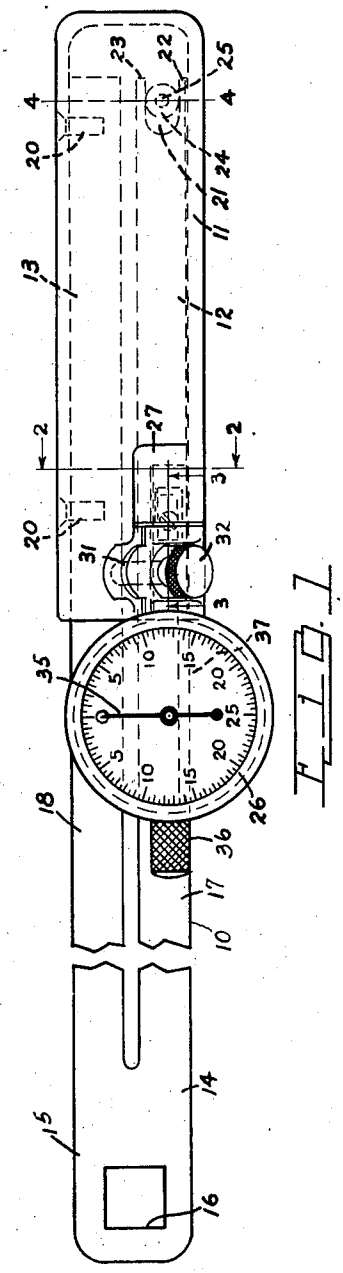


FIG. 1

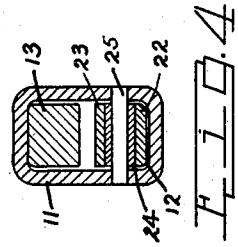


FIG. 4

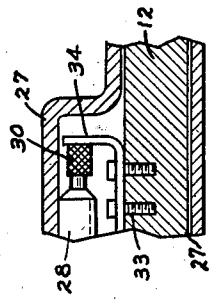


FIG. 3

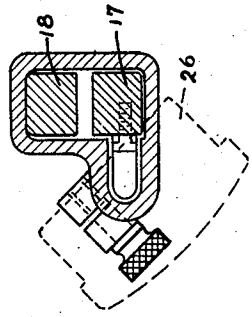


FIG. 2

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TORQUE INDICATING WRENCH

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Application June 7, 1939, Serial No. 277,895

2 Claims. (Cl. 265—1)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

This invention relates to an improvement in the torque indicating wrench shown and claimed in applicant's prior Patent No. 2,125,945, issued August 9, 1938, particularly in reducing the number of leaves in the shank of the handle to a minimum of two, the objects and features of this invention including substantially all the objects and features of applicant's prior patent.

With the foregoing and other objects in view, the invention consists in the construction, combination and arrangement of parts hereinafter described and illustrated in the drawing, in which,

Fig. 1 is a top plan view of the wrench of this invention.

Figs. 2, 3 and 4 are sectional views respectively on lines 2—2, 3—3, and 4—4 of Fig. 1.

There is shown at 10 the wrench of this invention which consists of a sleeved handle 11 in which is inserted the bifurcated ends 12 and 13 of the wrench bar 14. The wrench bar 14, which may be constructed from a single forged bar suitably heat treated to provide the necessary physical qualities, has a single body portion 15 at one end in which is formed the socket receiving or nut receiving aperture 16. Extending from the body portion 14 are the leaves 17 and 18, leaf 17 terminating in the end 12, while the leaf 18 terminates in the end 13 within the sleeve handle 11. The leaves 17 and 18 are substantially square in cross-section and do not contact each other in contrast with the flat plates in the prior patent, which are greater in number than two, are rectangular in cross-section, and do contact each other. The end 13 of leaf 18 is immovably fixed to the sleeve handle 11 by means of screws 20 inserted through the side of sleeve handle 11. The end 12 of leaf 17 is bifurcated to provide a recess 21 dividing end 12 into the two projections 22 and 23. These projections 22 and 23 extend on opposite sides of a bushing 24 rotatably journaled on a pin 25 within the sleeved handle 11.

As will be apparent, the end 12 is free to move in the sleeved handle 11 and will move in one direction or the other whenever the socket receiving end 16 of the wrench is applied to a member to be turned and the handle 11 is manually operated to apply torque thereto. The greater the amount of torque applied, the greater the amount of movement there will be of the end 12 within the sleeved handle 11. This movement is measured and indicated by securing a dial indicator 26 within a boss 27 in the handle 11. The dial indicator 26 is provided with a cylindrical base 28 through which extends the indicator operating plunger 30, the indicator 26 being held in the boss 27 by having the boss 27 slitted as at 31 while a knurled thumb screw 32 extending across the slitted portion 31 of boss 27 tightens the slitted portions of the boss 27 on the base 28 to hold the dial indicator 26 in position. Secured to the leaf 17 by means of screws 33 is an upstanding finger 34 adapted to be abutted by the plunger 30.

In operation, indicator base 28 is placed into the boss 27 so that the plunger 30 is under partial pressure and the thumb screw 32 is tightened to hold it in such position. The wrench is used in the normal manner, the indicator needle 35 having been first set at the zero position on the dial indicator 26 by means of the adjusting screw 36. The wrench may be used then to tighten either a right handed or a left handed nut or bolt, the indicator needle 35 moving to the right or left over the indications, as the case may be. If desired, the leaf 17 may be chamfered as at 37 so as to permit the dial indicator 26 to be set at a 45 degree angle relative thereto to permit easier reading.

In using the wrench the operator may watch the movement of the indicating needle 35 over the indications until it reaches the proper indication showing that the desired amount of tension is placed on the bolt and nut he is putting into position, and thereby avoid the danger of leaving the bolt and nut either too tight or too loose.

Other modifications and changes in the proportions and arrangements of the parts may be made by those skilled in the art without departing from the nature of the invention, within the scope of what is hereinafter claimed.

The invention described herein may be manufactured and/or used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

1. A torque indicating wrench comprising a bolt or nut cooperating means at one end, a sleeved handle member at the other end and a bifurcated shank extending from the bolt or nut cooperating means into said sleeved handle member, said bifurcated shank comprising a pair of bar members, one of said bar members being fixed within said sleeved handle member, and means affixed to said handle member and cooperating with the other of said bar members to

indicate the relative longitudinal displacement of the second bar member to the first mentioned bar member under bending movement in the plane of said bar members.

2. A torque indicating wrench comprising a bolt or nut cooperating means at one end, a sleeved handle member at the other end and a bifurcated shank integrally extending from the bolt or nut cooperating means into said sleeved handle member, said shank comprising a pair of bar members, one of said bar members being secured within said handle member, the other bar member being slidably guided within said sleeved handle member in the same plane as said first bar member, and indicator means affixed to said handle member and cooperating with said slidable bar member to indicate the relative longitudinal displacement of the slidable bar member to the first mentioned bar member under bending movement in said plane of said bar members and thereby disclose the tension being applied to the bolt or nut being operated on.

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