

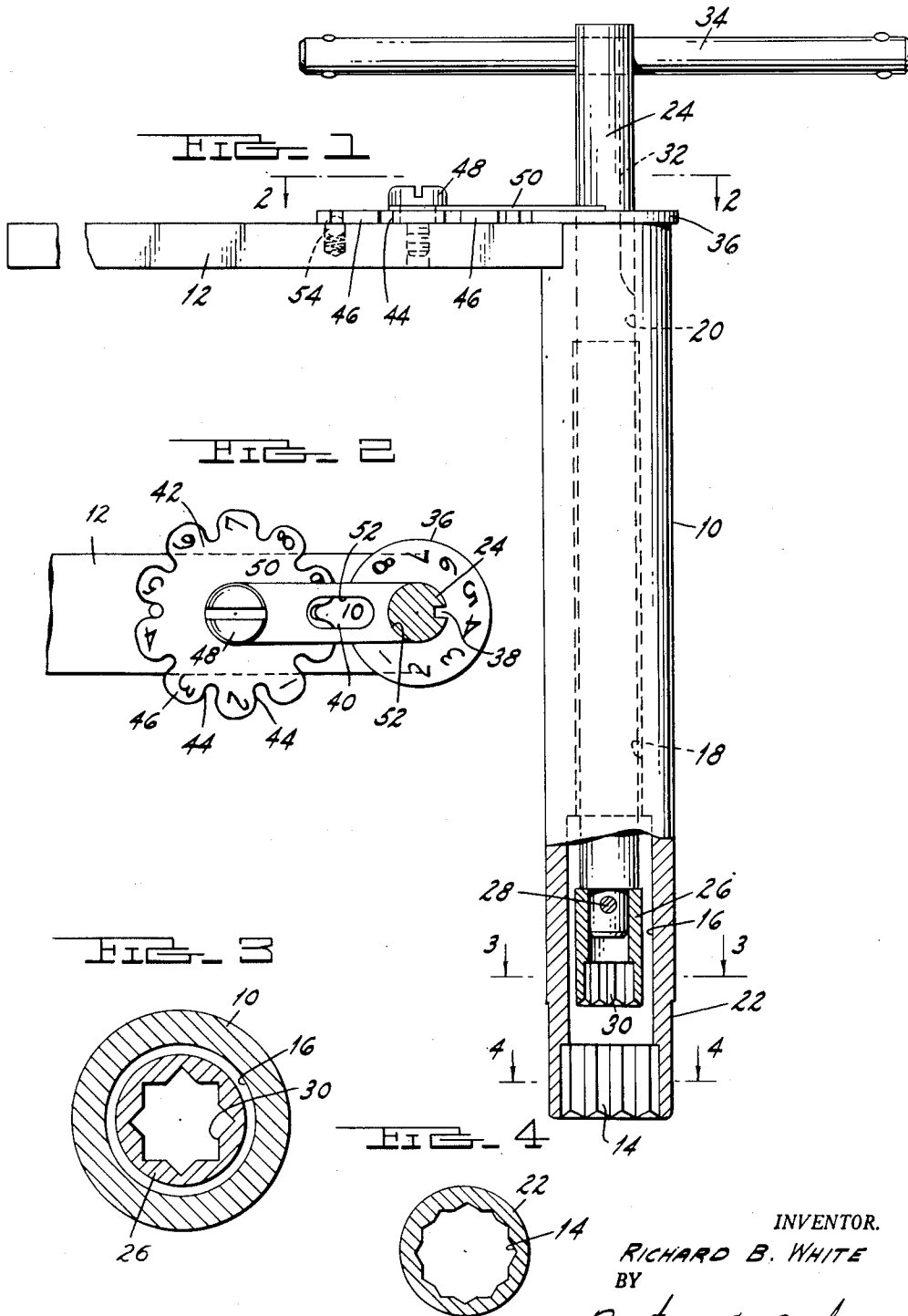
April 30, 1957

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2,790,343

BOLT-HOLDING WRENCH WITH ROTATION COUNTING MEANS

Filed Dec. 27, 1955



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2,790,343

BOLT-HOLDING WRENCH WITH ROTATION COUNTING MEANS

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Application December 27, 1955, Serial No. 555,458

7 Claims. (Cl. 81—55)

This invention relates to an improved tool adapted to simultaneously grip individual coaxially arranged relatively rotatable elements and impart relative rotation therebetween and indicate the number of turns imparted to at least one of the elements to facilitate rotative adjustment thereof.

An object of the invention is the provision of a wrench having a body portion adapted to non-rotatively engage one of a pair of co-axially arranged relatively rotatable elements, with the body portion supporting a spindle for rotatable movement with respect to the body and with the spindle adapted to non-rotatively engage the other of said co-axially arranged elements, and with a counting device mounted upon and connected to said body portion and spindle to count the number of revolutions of either the spindle or body member relative to the other. One of said co-axially arranged relatively rotatable elements may be an adjustment screw or the like, while the other element may be a jam nut threadedly received over the screw, with the wrench operable to initially loosen the jam nut and thereafter permit adjustment of the screw, followed by a re-tightening of the nut, with the counting device serving to indicate the number of revolutions of the adjustment screw during the rotation thereof.

Another object of the invention is the provision of a counting device in a wrench of the character mentioned which includes two parts, one part indicating fractions of revolutions and the other part indicating full revolutions, with one of the parts being connected to that portion of the wrench adapted to engage the adjustment screw and the other part being connected to that portion engageable with the jam nut, and with the said two parts being connected together for intermittent driving of one part by the other upon relative rotation between that portion of the wrench engaging the jam nut and that portion engaging the adjustment screw.

Another object of the invention is the provision of a torquing device or wrench of the character mentioned wherein the body portion comprises a hollow cylindrical member having an interiorly recessed jam nut engaging portion at one end and the screw engaging portion comprises a spindle received through the hollow body for rotatable movement relative thereto and provided with a screw engaging portion received interiorly of the jam nut engaging recessed end of the body portion, with one part of the counter device mounted on the spindle to rotate therewith and marked to indicate fractional revolutions of the spindle, and the other part of the counter rotatively supported on the body portion and indicating full revolutions of the spindle, with the two parts of the counter connected together for intermittent driving of the last mentioned part by the first mentioned part, and with the parts of such character that they may be readily initially set prior to each torquing operation accomplished by the wrench.

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Another object of the invention is the provision of a wrench of simple and rugged design and which is highly efficient in operation and may be produced at a low cost.

Other objects, advantages and meritorious features will more fully appear from the following specification, appended claims and accompanying drawings, wherein:

Fig. 1 is a side elevation of a tool embodying the invention;

Fig. 2 is a cross sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a cross sectional view taken on the line 3—3 of Fig. 1; and

Fig. 4 is a cross sectional view taken on the line 4—4 of Fig. 1.

As shown in the drawing the invention is embodied in a torquing device or wrench having a body portion which includes a long slender cylindrical body member proper 10 and a laterally projecting handle 12 secured to the upper end of the body member. The lower end of the body member 10 is interiorly shaped to define a socket type nut engaging head indicated at 14. Immediately above the nut engaging portion the interior of the body defines a bore 16 opening into a lesser diameter bore 18 with the latter, in turn, opening into a still smaller bore 20. The lower end of the body member 10 may be exteriorly of reduced diameter as at 22 to permit engagement of the head portion 14 about a jam nut or the like (not shown) where the nut is received in a confining recess.

Received within the body member 10 and supported thereby for rotatable and reciprocable movement is a spindle 24 provided at its lower end with a head portion 26 which may be in the form of an internally recessed socket adapted to be received in non-rotatable engagement over an adjustment screw or the like (not shown), which may be threadedly coupled with the jam nut about which head portion 14 of the body 10 is received. The socket or head 26 may be secured in any convenient manner to the lower end of the spindle, either as by a pin or the like or a conventional spring loaded ball entering a provided notch in the wall of the socket. Either a pin or a conventional ball or the like may be positioned as at 28. The interior of socket 26 may be shaped as shown in Fig. 3 and indicated at 30 to effect the non-rotatable engagement of the socket with the head of the adjustment screw.

The spindle 24 is held by the reduced diameter bore 20 against wobbling of the spindle within the body, and bore 20 serves as a bearing surface to ensure smooth, rotatable action of the spindle within the body. The upper end of the spindle 24 may be longitudinally grooved as at 32. A handle 34 is extended through a transverse aperture in the upper end of the spindle to provide a hand grip portion to facilitate torquing of the spindle.

Mounted upon the spindle for axially shiftable movement with respect thereto is a counting disc 36 provided with an inwardly extending projection 38 adapted to be received within and cooperate with groove 32 to prevent relative rotation of the disc upon the spindle. The disc may be provided with suitable indicia to indicate fractional portions of revolution of the spindle, as shown in Fig. 2. Disc 36 is also provided with a radially outwardly extending tooth or lug 40 for a purpose hereinafter mentioned.

Mounted on the handle 12 for rotation is a counting disc 42 provided with a plurality of radially inwardly extending peripherally spaced apart grooves or slots 44 defining radially outwardly extending projections or teeth

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46. The tooth 40 of disc 36 is adapted to be received between successive adjacent teeth 46 on disc 42 during rotation of the spindle 24 relative to the body member 10. Upon each complete revolution of disc 36, disc 42 is moved one increment as defined by the radial projections or teeth 46. The projections or teeth 46 may be suitably marked to indicate full revolutions of disc 36.

The discs 36 and 42 are held in proper planar relation by means comprising a screw or the like 48 received through disc 42 and serving as the axis for rotation thereof, and threaded into handle 12 as shown in Fig. 1, and an elongated plate 50 overlying the discs and with screw 48 extending through the plate at one end, and with the opposite end of the plate semi-circularly relieved as at 52 to fit about the spindle 24. The plate 50 is provided with an elongate slot 52 to permit the operator of the wrench to observe the indicia on the discs, with the slot serving as a reference point in reading the indicia on the discs. A spring loaded detent 54 is received within handle 12 and adapted to successively enter the grooves 44 between teeth 46 of disc 42 and releasably retain disc 42 in successive rotative positions.

In the operation of the wrench, the operator places head portion 14 of body member 10 over the jam nut encircling the screw which he desires to adjust the position of, and pushes spindle 24 downwardly such that it engages the head of the adjustment screw. By means of handle 12, and while holding handle 34 stationary, the jam nut is loosened. With the jam nut loosened, the wrench may be removed therefrom and the counter mechanism set at 0—0. This is accomplished by rotating body 10 and spindle 24 such that the tooth 40 is disengaged from the grooves 44 and disc 42 may be rotated to a position approaching the zero setting by manipulation with the fingers. Spindle 24 is then rotated until it approaches the zero setting and the tooth 40 and that groove in disc 42 adjacent the zero setting of disc 42 are engaged and the two discs rotated to a zero-zero setting. Thereafter the wrench is replaced upon the jam nut and adjustment screw, and adjustment of the screw is accomplished by reading the number of revolutions that are turned from the disc 42 and the fractional revolutions from disc 36. It is apparent that on each complete revolution of disc 36, disc 42 would be turned a fraction of a revolution; in other words, that disc 42 is intermittently driven by disc 36.

What I claim is:

1. A wrench adapted to engage a pair of co-axial relatively rotatable elements for the purpose described comprising: a body member provided at one end with a head portion for non-rotatively engaging one of said elements, a spindle supported in parallelism on the body member for rotation relative thereto and provided with a head portion co-axial with the head portion of the body member for non-rotatively engaging the other of said elements, a radially projecting part mounted on the spindle to rotate therewith and having at a radial extremity a tooth-like portion, and a counting disc rotatively supported on the body and peripherally notched at spaced apart intervals to receive the tooth-like portion of said radially projecting part for intermittent driving of the disc during relative rotation between the spindle and the body member, and said disc being marked to indicate the number of revolutions of said part.

2. The invention as defined in claim numbered 1 characterized in that said radially projecting part mounted on the spindle comprises a counting disc having a radially projecting tooth-like lug at the periphery thereof and is marked to indicate fractions of full revolutions of the spindle.

3. A wrench adapted to engage a pair of co-axial relatively rotatable elements for the purpose described comprising: a body member provided at one end with a head portion engageable in non-rotative relation with one of

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said elements, a spindle supported in parallelism on the body member for rotation and reciprocation relative thereto and provided with a head portion co-axially aligned with the head portion of the body member for non-rotative engagement with the other of said elements, a counting disc mounted for rotation on the body and provided with radially extending peripherally spaced projections, and another disc mounted upon the spindle for rotation therewith and slidable shifting relative thereto and provided with a radially extending projection receivable between successive adjacent projections on the first mentioned disc to intermittently drive such disc during relative rotation between the spindle and body member.

4. A torquing device adapted to engage a pair of co-axial relatively rotatable elements for the purpose described comprising: a body member provided at one end with a head portion engageable in non-rotative relation with one of said elements, a spindle supported in parallelism on the body member for rotation and reciprocation relative thereto and provided with a head portion co-axially aligned with the head portion of the body member for non-rotative engagement with the other of said elements, a handle secured to and projecting laterally from said body member, a counting disc mounted for rotation on said handle and provided with radially extending peripherally spaced apart projections, another counting disc mounted upon the spindle for rotation therewith and axial shifting relative thereto and provided with a radially outwardly extending lug receivable between successive adjacent projections on the first mentioned disc to intermittently drive such disc during relative rotation between the spindle and body member, and the first mentioned disc marked to indicate full revolutions of the second mentioned disc and the latter being marked to indicate fractional revolutions thereof.

5. A wrench adapted to engage a pair of co-axial relatively rotatable elements for the purpose described comprising: a hollow cylindrical body member provided at the lower end with a head portion receivable in non-rotative engagement over one of said elements, a spindle received through and supported in co-axial relation by the body member and provided at the lower end with a head portion disposed within the head portion of the body member and engageable in non-rotative relation with the other of said elements, said spindle projecting outwardly from the upper end of the body member and provided with a longitudinally extending groove, a laterally extending handle mounted on the upper end of the body member, a counting disc mounted for rotation on said handle and provided with radially extending peripherally spaced apart projections, a counting disc mounted for axial shiftable movement upon the spindle adjacent the upper end of the body member and provided with an inwardly extending part received within and cooperating with said slot to prevent relative rotation between such disc and spindle, a radially outwardly extending tooth-like projection on the latter disc engageable between successive adjacent projections on the first mentioned disc to intermittently drive the same for relative rotation between the spindle and body member.

6. The invention as defined in claim numbered 5 characterized in that means are provided on said handle for rotatively securing the disc mounted thereon to such handle with said means extending over and overlying the disc mounted on the spindle and preventing axial shifting of such disc away from the upper end of the body member during axial shifting of the spindle.

7. The invention as defined in claim numbered 5 characterized in that a spring loaded detent is mounted on the handle and releasably engageable between successive adjacent projections on the disc mounted on the handle during rotation of the disc to prevent unintended rotation of the disc during the periods of disengagement of the

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tooth-like projection on the disc on the spindle with successive adjacent teeth of the disc on the handle.

References Cited in the file of this patent**UNITED STATES PATENTS**

435,013	Calkins	Aug. 26, 1890
1,355,440	Weisenback	Oct. 12, 1920

5

2,267,012
2,339,210
2,559,332
2,736,220

20,873

6

Bowne	Dec. 23, 1941
Volz	Jan. 11, 1944
Wright	July 3, 1951
Kamuk	Feb. 28, 1956

FOREIGN PATENTS

Great Britain	of 1907
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