

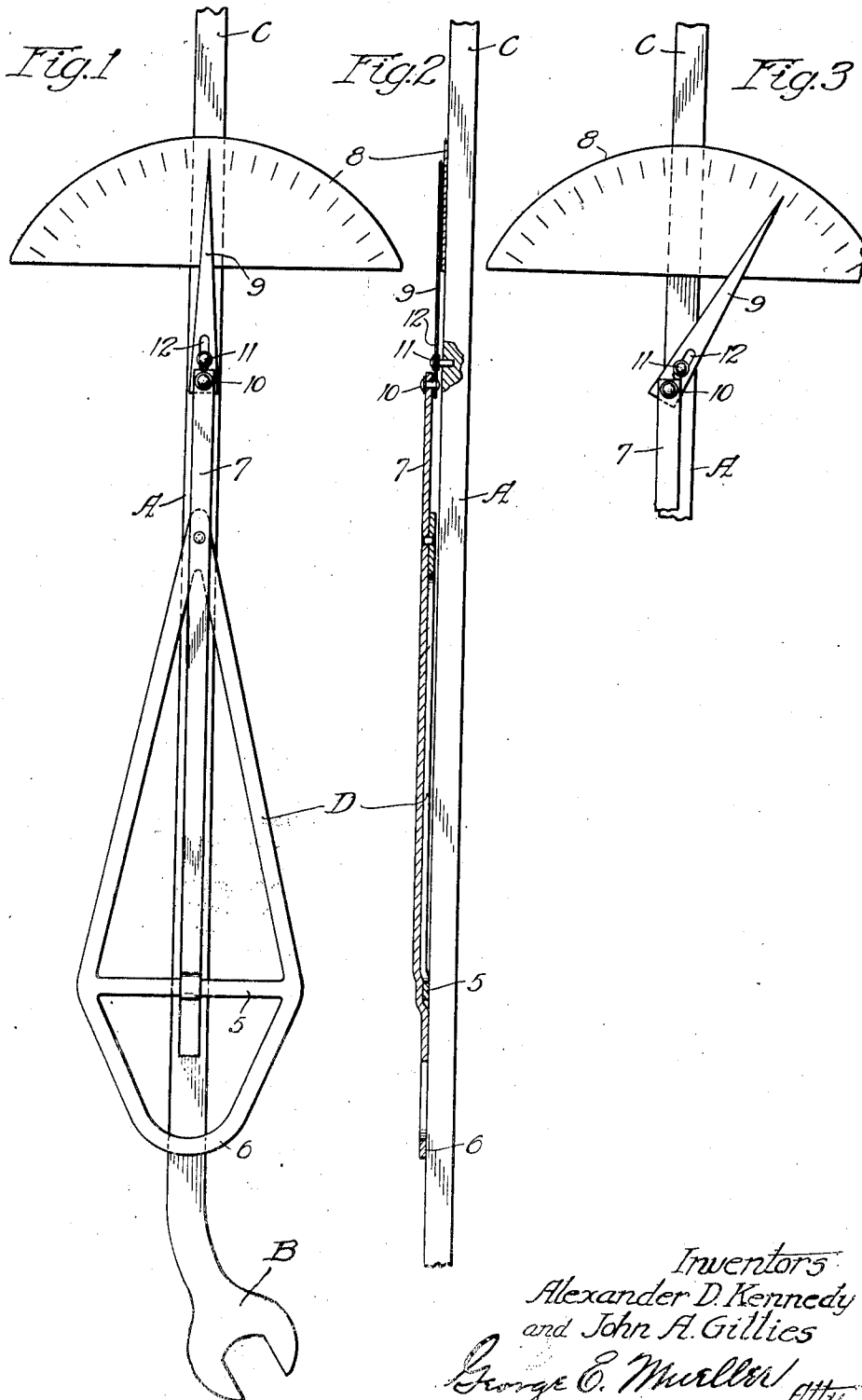
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A. D. KENNEDY ET AL

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WRENCH

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UNITED STATES PATENT OFFICE

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WRENCH

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Our invention relates to wrenches and has to do more particularly with wrenches adapted to measure bolt tension, or in other words to measure or indicate the torsional strain or pressure which is being placed upon the wrench handle when the wrench is applied to a nut or similar device.

For the purpose of illustration our invention is shown as applied to a track wrench, that is one adapted for applying nuts to the joint bolts, although of course not confined to any particular use.

In applying the rail joints the workmen depend upon their best judgment in applying the same tension to all of the bolts in a joint, but in this operation it is recognized that in many cases the joints are too tight or too loose, or the four or more bolts in a single joint will be applied at different tensions so that there may be only one or two of the bolts actually holding the plate.

With our improved wrench a uniform tension on all of the bolts will be insured, thus securing a greatly desired condition. Also a predetermined tension on all bolts may be secured so that the most desirable uniform tension is applied.

An object of our invention is to provide a wrench of the above character which is simple and sturdy in construction, which will undergo the hard usage applied to such a device, positive and uniform in operation, and in which the indicating or measuring means operates responsive to the deflection of a resiliently bendable handle-shank when operating pressure is applied to the handle.

For a better understanding of our invention reference is to be had to the accompanying drawing, in which—

Fig. 1 is a face view of the wrench in its normal condition;

Fig. 2 is a right side view of Fig. 1 with the indicating mechanism shown in section; and

Fig. 3 shows the indicating dial with the needle in an indicating position.

Referring now more in detail to our invention as illustrated herein, we provide a main wrench member in the form of a resiliently bendable handle-shank portion A preferably

extending integrally from the jaw end B and ending in a handle portion C. The shank portion A is preferably of such material and dimensions that when pressure or a pull is applied to the handle end C with the jaw end B gripping a nut or other device which is to be turned on a bolt, the said portion A will bend under the strain but return to its normal position when the strain or pressure is removed.

We utilize this resilient bending or deflection of the wrench to measure the pressure applied to the wrench or the tension upon the bolt, and to this end apply a rigid framework to the jaw or non-bendable end of the wrench, this framework in the present case including the marginal member D secured to the wrench in a suitable way at the cross pieces 5—6 and preferably by welding thereto. This framework extends alongside of the shank and carries a central bar 7 which is suitably secured to the frame D so as to be held stationary thereby. This framework as illustrated is of a very stiff and rigid construction and remains stationary relative to the jaw end B so that when the shank is deflected it moves to one side or the other of the extension 7, as indicated in Fig. 3.

In order to register or indicate the deflection of the shank we provide a scale or dial 8 which is secured to the handle end of the wrench and cooperates with an indicating needle 9. In order to more accurately measure the force which is being applied or the tension of the bolt, we preferably amplify the movement of the needle 9 and to this end pivotally attach it to the movable or deflecting portion A of the wrench and to the rigid extension 7, the end of the needle 9 being preferably secured to the extension 7 by the pivot 10 and an intermediate portion of the needle pivotally secured to the shank A by a pivot pin 11 passing through a slot 12 in the needle, so as to permit a sliding thereof as indicated in Fig. 3.

Any suitable indicating calibration may be placed upon the dial 8 and this may be calibrated to indicate the tension on the bolt or to indicate the pressure or pull upon the handle end C. It will be apparent that any suitable calibration may be used, but one

that will always give a uniform registration or indication so that the operators will know when a desired tension of the bolt is secured is preferable.

5 It is apparent from the drawings and preceding description that the wrench of our invention is particularly adaptable for the use to which it is intended. The tension or deflection determining feature is so arranged
10 as not to interfere in any way with the use of the wrench, and since the frame is light and thin but still adequately strong, it can be made to lie flatly along one side of the wrench in a simple effective manner. We
15 are aware that other mechanisms have been suggested for determining bolt tensions, or for determining the deflection of various devices in analogous situations, but within our knowledge none of these prior art devices
20 have been thoroughly successful and certainly are entirely unsuited for use in the way in which our device is used.

In the manufacture of the wrenches they are preferably all calibrated so as to give the
25 same registration or indication, although of course this is not essential for all uses of the device.

Although we have shown a specific preferred construction of our invention, we contemplate making it in other ways than that illustrated and therefore do not desire to be
30 limited to the exact structure shown and described, but aim to cover all that which comes within the spirit and scope of the appended
35 claim.

What we claim as new and desire to secure by United States Letters Patent is:—

A tension measuring wrench comprising an elongated integral jaw, shank and handle
40 member; the shank portion of which member is resiliently bendable, a thin, flat, wide, elongated rigid frame fixedly secured at one side of the wrench to the jaw end and extending toward the handle but free therefrom, where-
45 by the handle end may be deflected relative to that end of the frame adjacent to said handle end of the wrench, a needle pivotally attached at one end to the free end of the frame and at an intermediate point of said
50 needle to the handle part of the wrench with its free end projecting over the deflectable end of the shank, respectively, so as to produce an amplified movement of the needle when the shank is deflected, and a dial for
55 indicating the extent of movement of the needle.

In witness whereof, I hereunto subscribe my name this 15th day of January, 1927.

ALEXANDER D. KENNEDY.

60 In witness whereof, I hereunto subscribe my name this 27 day of January, 1927.

JOHN A. GILLIES.