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PATENTED JULY 2, 1907.

A. L. MOSS.
WRENCH.

APPLICATION FILED DEC. 21, 1906.

2 SHEETS—SHEET 1.

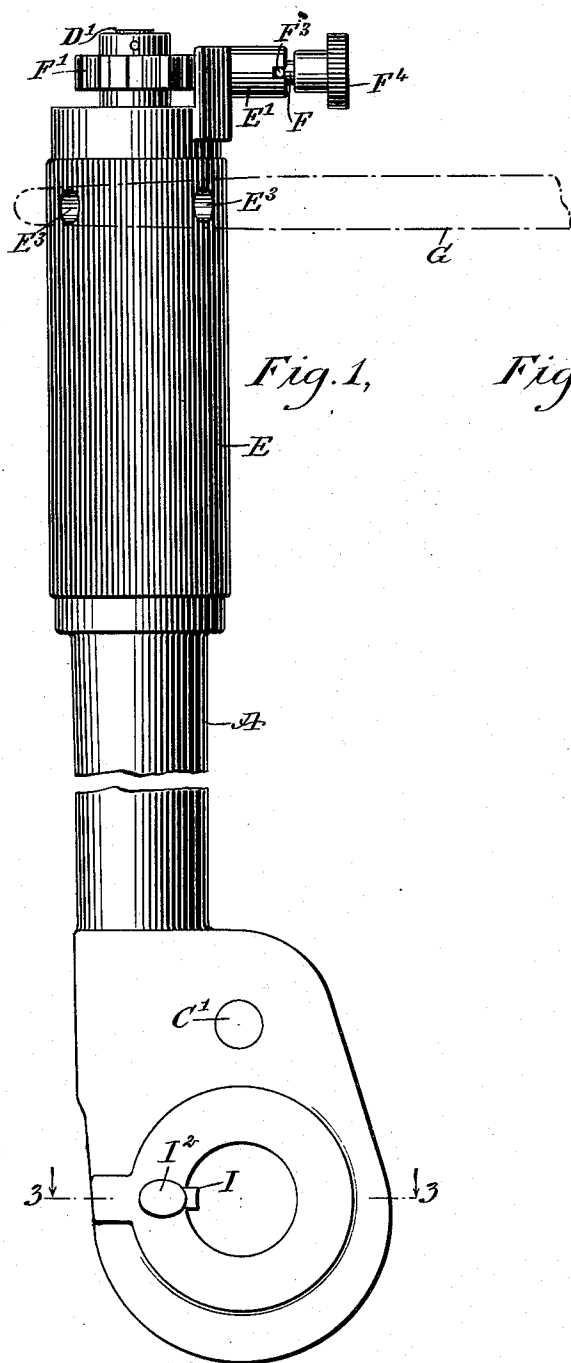
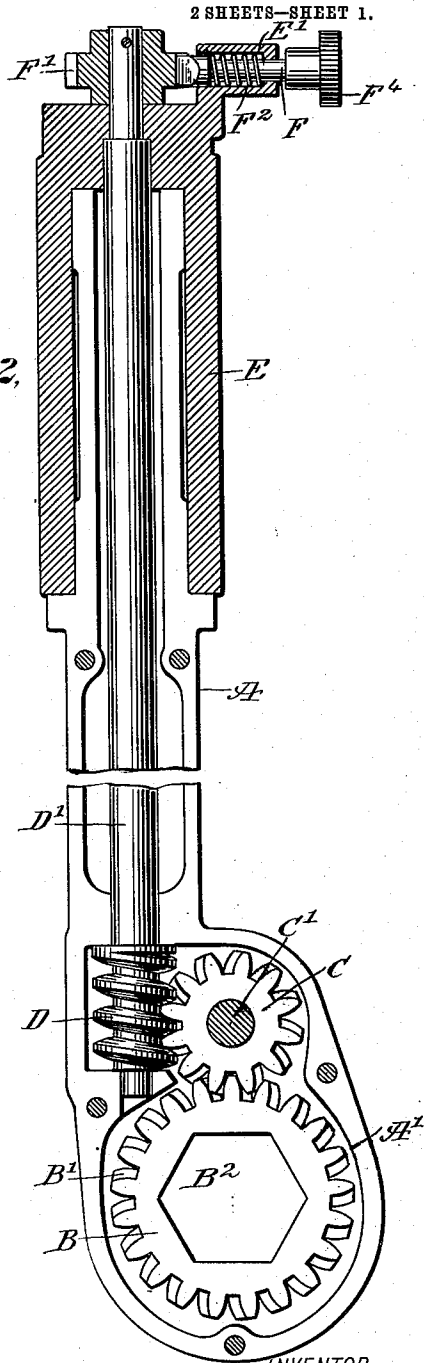


Fig. 1,

Fig. 2,



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3,

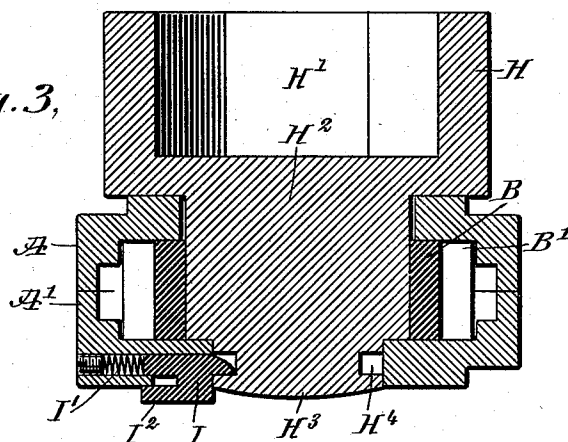


Fig. 4,

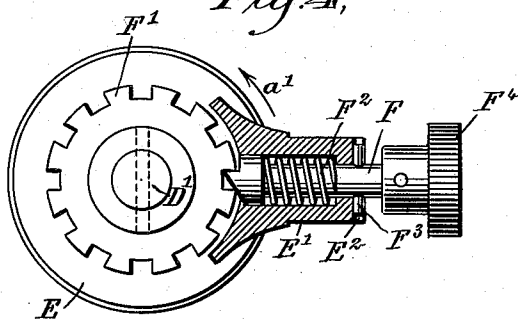


Fig. 5,

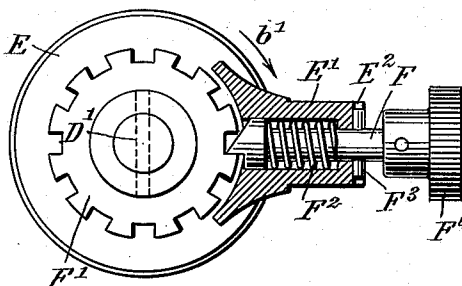


Fig. 6,

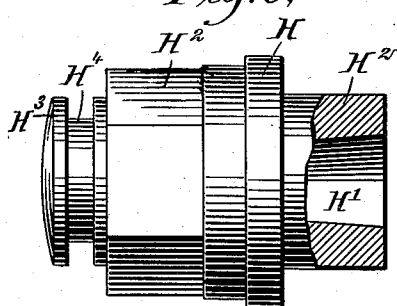
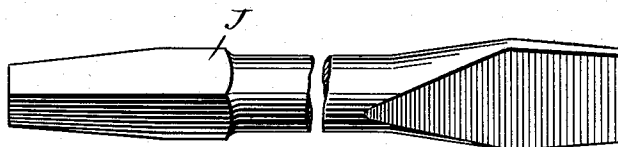


Fig. 7.



WITNESSES

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UNITED STATES PATENT OFFICE.

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WRENCH.

No. 858,894.

Specification of Letters Patent.

Patented July 2, 1907.

Application filed December 21, 1906. Serial No. 348,954.

To all whom it may concern:

Be it known that I, AUGUSTUS LEICESTER MOSS, a citizen of the United States, and a resident of Sandusky, in the county of Erie and State of Ohio, have invented a new and Improved Wrench, of which the following is a full, clear, and exact description.

The invention relates to wrenches, such as shown and described in the application for Letters Patent of the United States, No. 341,557, filed by me November 1, 1906.

The object of the present invention is to provide a new and improved wrench, more especially designed for turning nuts, screws and other articles in places not easily accessible by ordinary wrenches.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the improvement; Fig. 2 is a sectional plan view of the same; Fig. 3 is a cross section of the same on the line 3—3 of Fig. 1; Fig. 4 is an end elevation of the handle and its connection with the worm shaft; Fig. 5 is a like view of the same showing the parts in a different position; Fig. 6 is a side elevation of one of the interchangeable sockets, and Fig. 7 is a perspective view of a tool adapted to be applied to the interchangeable socket.

The stock A is provided with a seat A' for the head B to turn in, and on the peripheral surface of the said head are integrally formed spiral gear teeth B' in mesh with correspondingly shaped teeth on an intermediate gear wheel C mounted to rotate on a stud C' held on the stock A. The intermediate gear wheel C is in mesh with a worm D having its shaft D' journaled in suitable bearings arranged in the stock A, as plainly indicated in Fig. 2, and the said shaft D' is adapted to be turned in either direction by the operator turning a tubular handle or sleeve E mounted to turn loosely on the outer end of the stock A.

In order to connect the handle E with the shaft D' a pawl and ratchet mechanism is provided consisting of a pawl F mounted to slide in a bearing E' formed on the handle E, and the said pawl is adapted to engage a toothed wheel F' secured on the outer end of the shaft D'. The pawl F is pressed on by a spring F² and is V-shaped and adapted to be given a half turn, so as to engage the pawl with the teeth of the wheel F' in either of two positions, as illustrated in Figs. 4 and 5, to turn the shaft D' in the desired direction on turning the handle E correspondingly. In order to hold the pawl F in either of the two positions mentioned a pin F³ is provided extending transversely through the pawl F

and adapted to be seated in a slot E² formed on the outer end of the bearing E'. The outer end of the pawl F is provided with a suitable handle F⁴ adapted to be taken hold of by the operator for pulling the pawl F outward against the tension of the spring F² and moving the pin F³ out of the slot E² to permit turning of the pawl F to the desired position, after which the pawl is released to allow the spring F² to move the pawl inward in engagement with the teeth of the wheel F'.

Now when the pawl F is in the position shown in Fig. 4 and the handle is turned in the direction of the arrow a', then the shaft D' is turned in a like direction owing to the connection of the pawl F with the wheel F', and when the operator turns the handle E in the reverse direction then the pawl F simply glides over the teeth of the wheel F' without turning the same.

When the pawl F has been turned to the position shown in Fig. 5 and the handle E is turned in the direction of the arrow b', then the shaft D' is turned in a like direction, and when the handle E is turned in the reverse direction then the pawl F simply glides over the teeth of the wheel F' without turning the latter. Now when the shaft D' is turned in either of the two directions mentioned, then the worm D turns the intermediate gear wheel C which by the gear teeth B' rotates the head B in the desired direction, that is, according to the direction in which the handle E is turned and the position of the pawl F relative to the toothed wheel F'.

The handle E is provided with spaced apertures E³ for engagement by a spanner G or a similar lever arm, for turning the sleeve E in either direction but with more power than could be exerted by the operator turning the handle E by hand.

The head B is provided with a polygonal recess B² for engaging a nut or like article of similar size, but when it is desired to engage a nut or a like article of a different size then use is made of interchangeable heads H, such as illustrated in Figs. 3 and 6, each head H having a polygonal recess H' for engaging the nut or other article to be turned.

The interchangeable head H is provided with a polygonal offset H² adapted to fit the correspondingly shaped recess B² in the main head B, and the polygonal offset H² terminates in a cylindrical offset H³ provided with an annular groove H⁴ adapted to be engaged by a catch I mounted to slide in suitable guideways arranged on the stock A, the catch being pressed inward by a spring I' so as to hold the catch in engagement with the annular groove H⁴. The catch I is provided with a suitable handle I² under the control of the operator, for moving the catch in or out of engagement with the annular groove H⁴. Now by reference to Fig. 3 it will be seen that the cylindrical offset H³ extends through a corresponding opening in the stock A and is adapted to be engaged by the spring catch I to hold the inter-

changeable head H in position in the main head B, and when the wrench is used and the main head B is turned as above explained, then a like turning motion is given to the interchangeable head H to turn the nut or other article engaged by the head H.

As shown in Fig. 7, a screw driver J or the like may be engaged with the recess H' in the head H, to turn the said screw driver on the operator turning the handle E.

It is understood that a set of interchangeable heads H may be used, each having the same polygonal offset H² but different sized recesses, each interchangeable head, however, fitting into the head B² of the main head B.

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

1. A wrench comprising a stock, a main head mounted to turn therein and having a polygonal recess, an interchangeable head having a polygonal recess and a polygonal offset fitting the recess in the said main head, the said interchangeable head having its polygonal offset terminating in a cylindrical offset provided with an annular groove, and a spring catch slidable on the said stock and adapted to engage the said groove.

2. A wrench comprising a stock, a main head mounted to turn in the said stock and having means for engaging the article to be turned, a gear wheel integral on the peripheral face of the said main head, an intermediate gear wheel journaled in the said stock, a worm wheel in mesh with the said intermediate gear wheel, a handle mounted to turn on the said stock, and a reversible pawl and ratchet connection between the said handle and the shaft of the said worm wheel.

3. A wrench comprising a stock, a main head mounted to turn in the said stock and having means for engaging the article to be turned, a gear wheel integral on the peripheral face of the said main head, an intermediate gear wheel journaled in the said stock, a worm wheel in mesh with the said intermediate gear wheel, a handle mounted to turn on the said stock and having means for the application of a hand lever to turn the handle, and a reversible pawl and ratchet connection between the said handle and the shaft of the said worm wheel.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AUGUSTUS LEICESTER MOSS.

Witnesses:

THEO. G. HOSTER,
JNO. M. RITTER.