No. 656,643. Patented Aug. 28, 1900.

H. G. HOADLEY.

WRENCH.

(Application filed June 22, 1898. Renewed Mar. 6, 1900.)

(No Model.)

Fig. 1

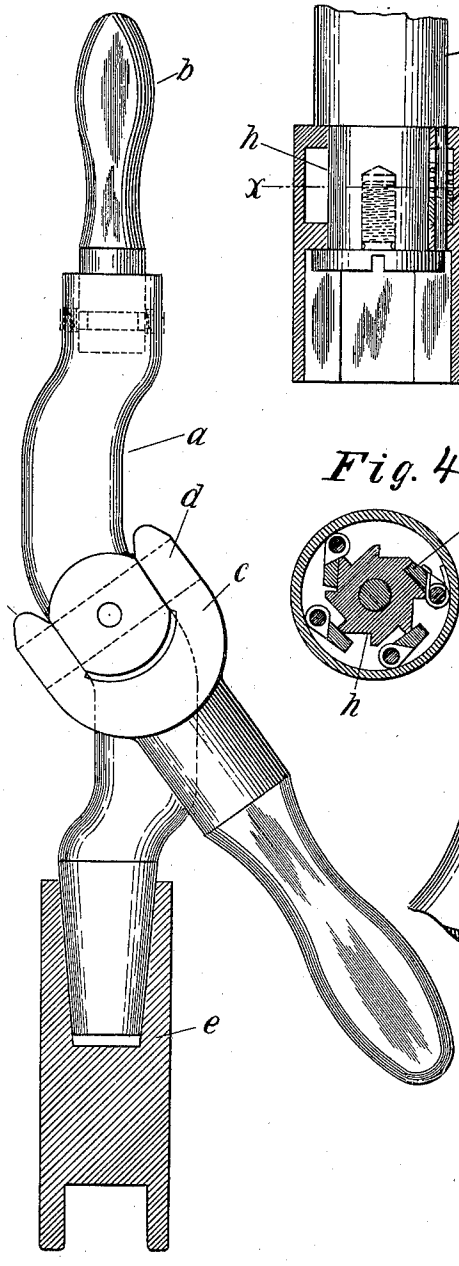


Fig. 3

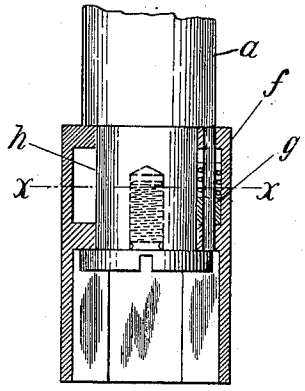
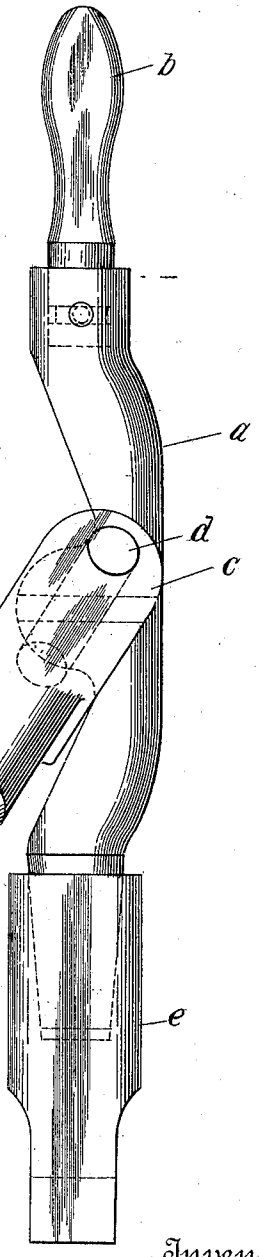


Fig. 4

Fig. 2



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WRENCH.

SPECIFICATION forming part of Letters Patent No. 656,643, dated August 28, 1900.

Application filed June 22, 1898. Renewed March 6, 1900. Serial No. 7,592. (No model.)

To all whom it may concern:

Be it known that I, HORACE G. HOADLEY, a citizen of the United States of America, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented a certain new and useful Improvement in Wrenches, of which the following is a description, reference being had to the accompanying drawings, wherein—

Figure 1 is what may be termed a side view of a mechanism embodying such improvement, with the wrench-socket shown in central longitudinal section. Fig. 2 is also a side view of the same mechanism shown in Fig. 1, but turned a quarter-way around, and here the wrench-socket is not shown in section. Fig. 3 is a modification view—a view in central vertical section of the lower end of the rotatory shaft and certain appurtenances. Fig. 4 is a view of the parts shown in Fig. 3, in horizontal cross-section on the plane denoted by the dotted line *x x*.

The object of the improvement is the production of a mechanism for converting an up-and-down movement given by the hand of the operator into a step-by-step rotation suitable for operating a drill or a nut in a confined space.

In the accompanying drawings the letter *a* denotes what may be termed the "rotatory" shaft.

The letter *b* denotes a bearing-handle for that shaft, it being a handle intended to be grasped by the hand of the operator and held stationary while the rotatory shaft has its step-by-step rotation given thereto.

The letter *c* denotes a lever formed into a yoke at one end and there pivoted to the said rotatory shaft through the agency of the trunnions *d*. This lever is intended to be vibrated up and down by one of the hands of the operator. Therefore it may properly be termed a "vibratory" lever. Its axis of vibration is at other than right angles to the axis of said rotatory shaft, and it results from this relation that when the lever *c* is vibrated vertically the rotatory shaft makes corresponding rotary movements back and forth. In order to permit a lengthened vibration of this vibratory lever, the body of the rotatory shaft is reversely offset above and below the point of the pivotal attachment of the lever to the shaft. Such back-and-forth rotary movements of the rotatory shaft can be made available for useful purposes—such, for instance, as the rotation of a nut. In Figs. 1 and 2 the rotary shaft is shown equipped with a socket-piece *e*, adapted for such step-by-step rotation of a nut. In the use of the device there shown it is necesary to detach the socket-piece from the nut under operation at every backward movement of said socket-piece. In Figs. 3 and 4 there are shown parts which avoid such detachment of the socket-piece in the backward movements of said rotatory shaft. In those figures the letter *f* denotes a socket-piece suitable for engaging with a nut rotarily attached to the rotatory shaft *a*. Between such rotary shaft and the socket-piece *f* there is the pawl *g* and ratchet *h* arrangement (shown in Fig. 4) which permits the backward movement of the rotatory shaft without detaching the same from the nut.

I claim as my improvement—

1. The rotatory shaft combined with the vibratory lever pivotally attached thereto on an axis at other than right angles to the axis of said shaft, all substantially as described and for the purposes set forth.

2. In combination, the rotatory shaft, the bearing-handle for that shaft, and the vibratory lever pivotally attached to said rotatory shaft on an axis at other than right angles to the axis of said shaft, all substantially as described and for the purposes set forth.

3. In combination, the bearing-handle, the reversely-offset rotatory shaft, and the vibratory lever pivotally attached to said shaft on an axis at other than right angles to the axis of said shaft, all substantially as described and for the purposes set forth.

4. In combination, the rotatory shaft, the vibratory lever pivotally attached to said shaft on an axis at other than right angles to the axis of said shaft, the socket-piece borne on said shaft and the pawl-and-ratchet arrangement intermediate of said shaft and said socket all substantially as described and for the purposes set forth.

HORACE G. HOADLEY.

Witnesses:
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