F. E. WALDEN.

WRENCH.

APPLICATION FILED JULY 28, 1920. RENEWED APR. 28, 1922.

1,437,458.

Patented Dec. 5, 1922.

Fig. 1

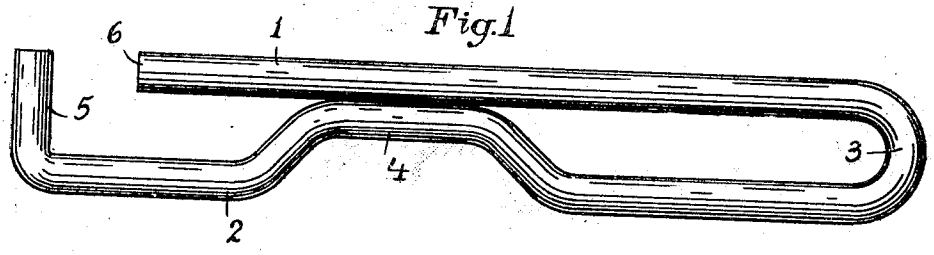


Fig. 2

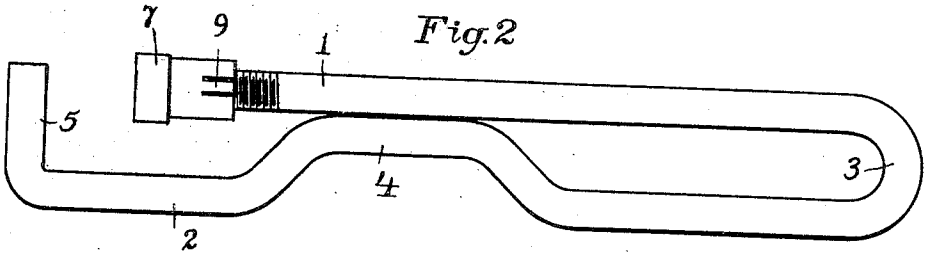
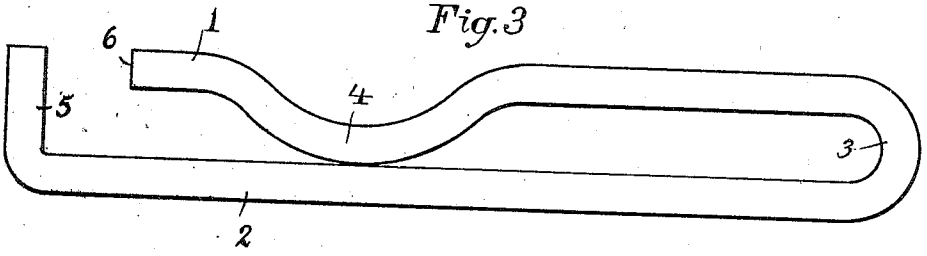


Fig. 3



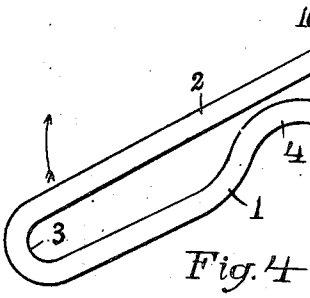


Fig. 4

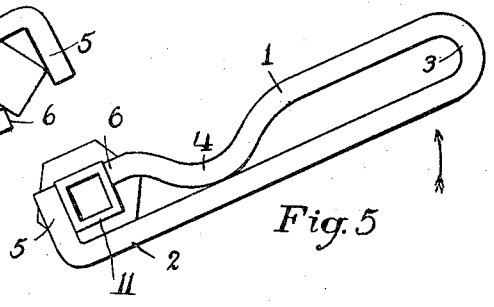
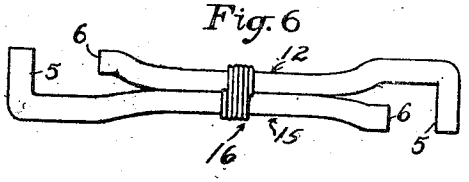


Fig. 5

Fig. 6



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UNITED STATES PATENT OFFICE.

FREDERICK E. WALDEN, OF WORCESTER, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WALDEN-STAX MANUFACTURING CO., OF STONEHAM, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

WRENCH.

Application filed July 28, 1920, Serial No. 399,506. Renewed April 28, 1922. Serial No. 557,226.

To all whom it may concern:

Be it known that I, FREDERICK E. WALDEN, a citizen of the United States, and a resident of the city and county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Wrenches, of which the following is a full, clear, and exact specification.

The object of this invention is the construction of a simple, inexpensive, efficient and durable ratchet wrench. To this end I have so bent a single length of wire rod or the like that while serving forcibly to turn a nut or bolt when swung in one direction, will disengage itself from the same and permit the wrench to be swung in the opposite direction for a fresh grip thereon. It is, therefore, a one-piece ratchet wrench.

In accomplishing this, the wrench is formed with two longitudinally extended members united at a common terminal, the opposite end of one member having an elbow spaced from the end of the other member for a distance very slightly in excess of the size of the nut, bolt or other polygonal device for which it is designed, means being provided whereby the two members cannot spring toward each other but are permitted to separate.

I prefer to have this wrench composed of steel rod, but I do not restrict myself thereto, nor to having the two members originally integral.

In the drawings forming part of this specification, Fig. 1 is a side view of a wrench embodying my improvements. Fig. 2 is a side view of the same made adjustable. Fig. 3 is a like view of a slight modification thereof. Fig. 4 is a side view on a smaller scale showing the manner in which the wrench can be swung backward without turning the nut with which it has been engaged. Fig. 5 is a similar view of the wrench showing it in its operative grip upon a socket. Fig. 6 shows a double form of the wrench.

As shown in Fig. 1, the metal rod is bent over on itself a short distance from its midlength, to compose two members 1 and 2, the diameter of the bend 3 corresponding somewhat to the size of nut or bolt for which the wrench is designed. The member 1 is here shown as entirely straight, but the member 2 as formed with an offset curve 4 contacting with the member 1. The member 2 is also longer than the member 1 and is formed with an elbow 5 at right angles thereto and spaced from the end 6 of the member 1 for a distance slightly in excess of the size of the polygonal object for which the wrench is designed. The length of the elbow 5 is designed to be substantially equal to the size of the nut or bolt-head for which the wrench is intended, and hence about the same as the space between the elbow and the terminal surface of the end 6, this terminal surface being at right angles to the general direction of the arm 1, and therefore parallel with the elbow 5.

The construction shown in Fig. 2 differs from the above simply in having the extreme portion of the member 1 threaded and mounting thereon a threaded thimble 7, the latter having its edge given two slots to form a tongue 9 designed to be pressed inward slightly in order to provide sufficient resistance to turning for ensuring that the thimble shall not accidentally shift its set position.

The wrench illustrated in Fig. 3 differs from that in Fig. 1 in having the arm 1 formed with an offset bend 4 instead of the member 2.

In use, the wrench is engaged with the polygonal device, either a nut or bolt head 10 shown in Fig. 4, or with the hollow stem 11 of one of the removable sockets now in common use, as shown in Fig. 5. If the socket 11 is to be turned backward for unscrewing a nut fitting it, then the wrench is applied thereto in the manner shown in Fig. 5 and the wrench pressed in the direction indicated by the arrow; but if the bolt or nut is to be screwed in, then the wrench is rotated to present its member 2 at the oppostie side of the nut or socket 11, and the wrench drawn toward the operator. In thus acting upon the wrench, the end 6 of the member is pressed toward the member 2 and the bend 3, while the base of the elbow 5 resists displacement in its direction. Since, the bend 3 will not yield, and the stop 4 prevents the member 1 from approaching the member 2, the device 11 is forced to turn with the wrench.

When, now, the wrench is swung in an opposite direction, the member 1 is sprung away from the member 2 by the action of

the nut or bolt 10 and the latter is not moved therewith. Hence by swinging the wrench back and forth, the nut, bolt or other device is given the desired step by step rotation in one direction. Where the nut or bolt is rectangular, four swings in one direction will give a full rotation thereto, but when the nut is hexagonal, six movements of the wrench will do the work.

Notwithstanding that the grip of this wrench is so powerful, its ratcheting yield is remarkably easy. Its economy of manufacture is self evident, and its durability very great.

In the construction shown in Fig. 6, there are two members 12 and 15 fastened together at approximately their midlengths in any suitable way, as by a wrapping of wire 16 or by spot-welding, each member having an elbow 5 and presenting an end 6 to the elbow of the other member, in order to provide two different sized wrench jaws in a single instrument.

It should be observed that in the use of this wrench, the object being forcibly turned thereby presses against the base of the elbow 5 and not against its tip, thereby ensuring against bending such elbow.

What I claim is:

1. A wrench comprising two substantially parallel members resiliently movable toward and from each other, one thereof having an elbow at its end projecting at right angles therefrom, and the other member having its terminal surface parallel with and spaced from said elbow and at a distance from the first member substantially equal to the length of said elbow, means being provided for preventing said members from approaching each other.

2. A wrench consisting of a length of steel rod bent near its midlength to compose two substantially parallel members resiliently movable away from each other but adapted to prevent movement toward each other, the end of one of the members being bent at right angles thereto to form an elbow reaching in front of the end of the other member but substantially as far therefrom as the length of such elbow, the last mentioned end being parallel with the elbow.

3. A wrench comprising two substantially parallel members movable away from each other and to a predetermined limit toward each other, one of the members having a terminal surface at substantially right angles to its general direction and spaced from the end of the other member, the portion of the member adjacent the terminal surface being threaded and an internally threaded thimble turning on said threaded portion.

4. A wrench comprising a single length of wire rod bent over upon itself to form two substantially parallel spaced members, one thereof having an elbow spaced from the end of the other member, said end being threaded, and an internally threaded thimble turning thereon, the thimble having its inner end provided with two slots to form a resilient finger.

In testimony that I claim the foregoing invention, I have hereunto set my hand this 23rd day of July, 1920.

FREDERICK E. WALDEN.