W. J. HANNA.

WRENCH.

APPLICATION FILED MAR. 31, 1916.

1,204,433.

Patented Nov. 14, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

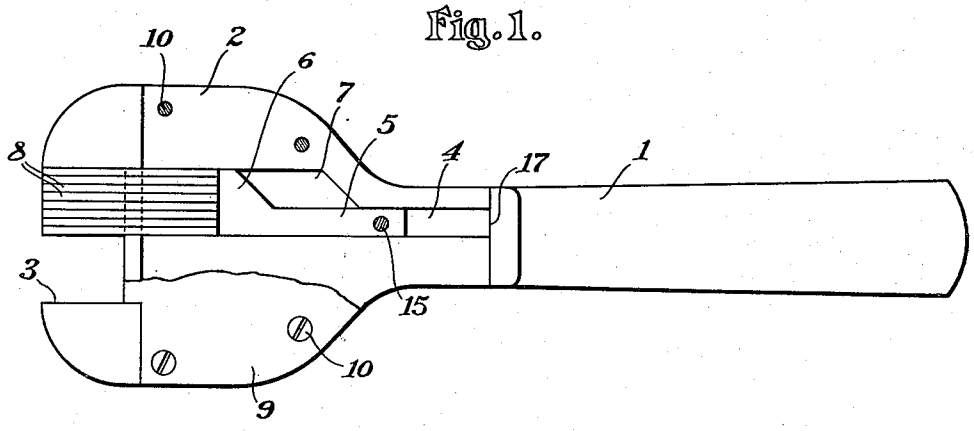


Fig. 2.

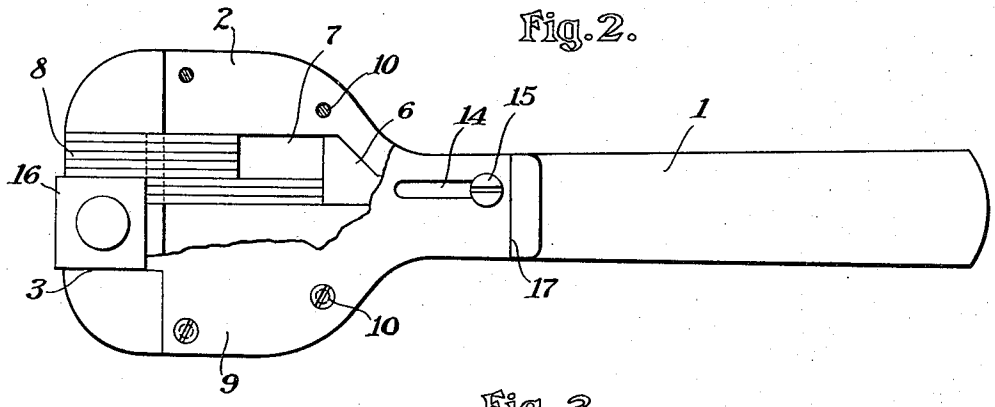


Fig. 3.

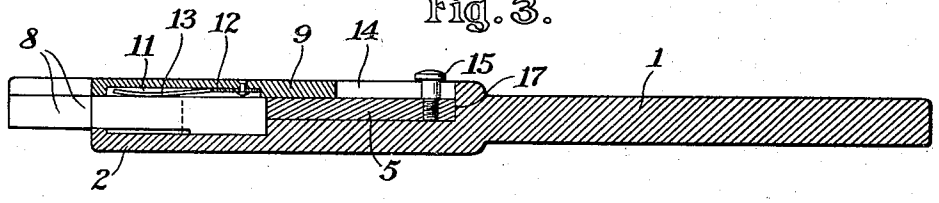
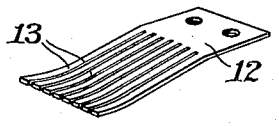


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

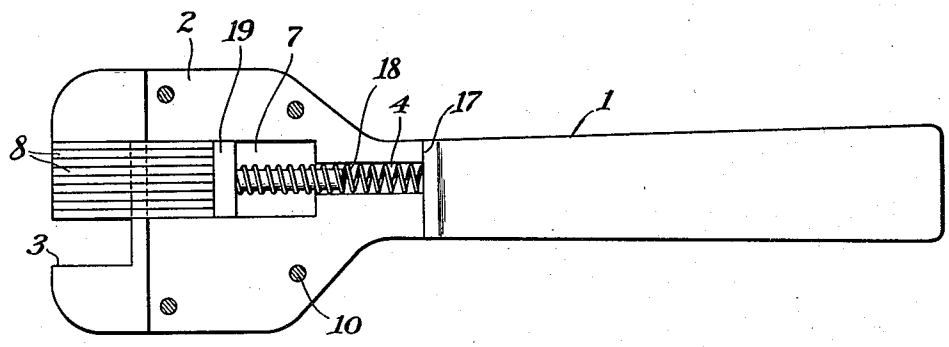


Fig. 6.

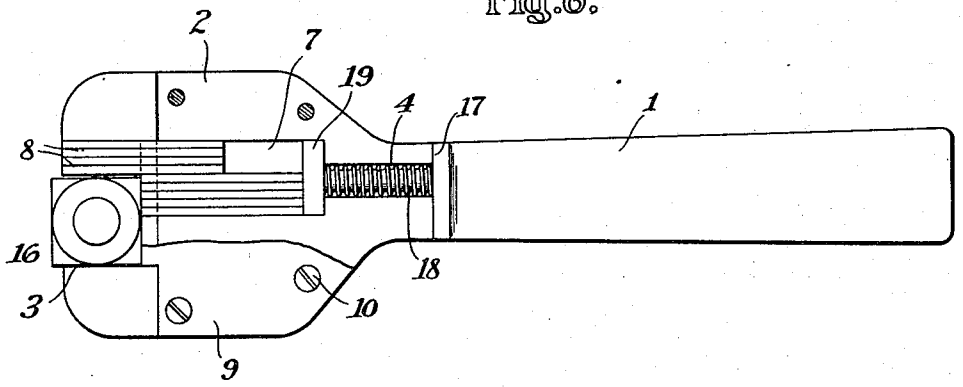
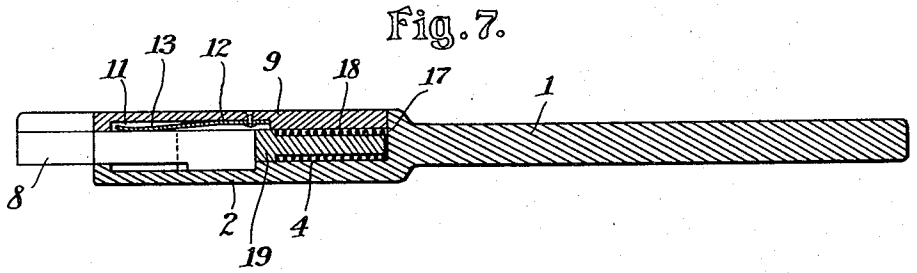


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM J. HANNA, OF GENESEO, NEW YORK, ASSIGNOR OF ONE-HALF TO MILLARD F. BOAS, OF ROCHESTER, NEW YORK.

WRENCH.

1,204,433. Specification of Letters Patent. Patented Nov. 14, 1916.

Application filed March 31, 1916. Serial No. 87,965.

To all whom it may concern:

Be it known that I, WILLIAM J. HANNA, a citizen of the United States, and resident of Geneseo, in the county of Livingston and State of New York, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

This invention relates to wrenches.

One of its objects is to provide a wrench that is self-adjusting when applied to nuts or bolt-heads of varying sizes.

Another object is to make it possible to reset the parts to normal position by a simple operation.

A third object is to construct the wrench so that it may be readily assembled and cheaply manufactured.

In the drawings: Figure 1 is a top-plan view of a wrench embodying this invention, partly broken away to show its interior construction; Fig. 2 is a similar view, but with some of the parts represented in different positions; Fig. 3 is a central vertical section, with the parts in the positions in which they are represented in Fig. 2; Fig. 4 is a perspective view of a detail; and Figs. 5, 6 and 7 are corresponding views of a modification.

The body 1 of the wrench may be formed as desired with a suitable length and cross-section, and this body is expanded, at one end, into a flat head 2, provided with a notch 3 that constitutes the nut-engaging jaw. Within the head 2, and preferably extending toward the body or handle 1, is a recess or groove 4 adapted to receive a member 5 in the form of a sliding bolt or bar. This bar may have one of its ends enlarged, as indicated at 6, for a purpose which will presently be described. Lying within the enlarged portion 7 of the groove 4 is a series of flat, comparatively thin bars or plates 8, each adapted for independent movement within said slot. The total thickness of all the bars 8 is substantially equal to the width of the portion 6 on the bolt 5.

Above the bolt 5 and the plates 8 is a cover or retaining-plate 9, which may be suitably fastened upon the head 2 as by screws 10. This plate or cover has a recess 11 in its inner face, and in this recess is fixed a spring-plate 12, the free end of which is split into separate fingers 13 equal in number to the plates 8, the width of each finger being such that it may bear upon one of the plates 8 without bearing upon any of the others. The cover 9 is also provided with a slot 14 through which projects a stop-pin 15 that is set in the bolt 5, see Fig. 3.

The operation of the device is as follows: Suppose that it is desired to engage with the wrench a nut that is wider than the open portion of the notch shown in Fig. 1. The wrench is placed in the plane of the nut and pushed toward the latter in the direction of its own length, so that part of the nut will necessarily displace some of the plates 8 in order to be engaged by the wrench, see Fig. 2. Of course the wrench is held so that one side of the nut may bear against the side of the notch 3 that is integral with the head 2, and then only so many of the bars 8 will be pushed backward as are required to make up the difference between the normal notch 3 and the width of the nut. In Fig. 2 the nut 16 is shown as having such dimensions that three of the plates 8 are displaced. When one or more of the plates 8 are displaced, as just described, the bolt 5 is moved toward the body 1, being guided by the recess 4, and can move no farther than the shoulder 17 which forms the inner end of said recess. The length of the recess 4 and the position of the shoulder 17 are such that when the end of the bolt 5 meets said shoulder the outer end of those plates 8 which have moved the bolt 5 will then lie flush with the inner side of the jaw-opening 3. Thus, in the position of the parts shown in Fig. 2, one side of the jaw-opening consists of a portion of a solid head 2, while the opposite side of the jaw-opening is formed by the plates 8 which were not displaced by the nut 16. These remaining plates are prevented from moving backward into the recess 7 by the fingers 13, which exert continuous pressure upon them, this pressure being sufficient merely to prevent any of the plates from accidental displacement. When it is desired to reset the plates 8 to the position shown in Fig. 1, it is accomplished by merely moving the stop-pin 15 the full length of the slot 14, inasmuch as the stop-pin is fixed in the bolt 5, so that the latter is thus caused to travel outwardly in the recess 4, and thereby necessarily push before it any of the plates 8 which are not in the normal or outermost position. The length of the slot 14 is such that when the pin 15 has reached its outer end, the plates 8 will be perfectly

alined with one another, as in Fig. 1. The drag exerted by the spring-fingers 13 on the plates 8 hold the latter immovable except when moved either by means of the bolt 5 or by pressing the plates against the nut.

In Figs. 5, 6 and 7 is shown a modification in which the plates 8 are normally held yieldingly in outward position by a spring 18 that lies within the recess 4, abutting at one end against the shoulder 17 at the end of said recess and at the other end against the bar 19, the latter being equal in width to the total thickness of all of said plates 8.

In the operation of the device shown in Figs. 5, 6 and 7, the nut displaces some of the plates as before, and when withdrawn the displaced plates are returned to their outer position by the spring 18, the other plates being prevented from moving backward into the recess 7 by the fingers 13 as in the other from of construction.

What I claim is:—

1. A wrench comprising a handle and body portion, the latter having a recess, a series of plates within said recess, separately movable in one and the same direction, and an actuating member within said recess, adapted to reset all of said plates at once to their outermost positions.

2. A wrench comprising a handle and body portion, the latter having a recess, a series of plates within said recess, separately movable in one and the same direction, and a resetting bar also within said recess and behind said plates and also movable in the direction of movement of said plates for resetting said plates.

3. A wrench comprising a handle and body portion, the latter having two jaws and a series of plates between said jaws that are separately movable away from said jaws, and a member adapted to move all of said plates simultaneously into position between said jaws and to be moved into its retracted position by any of said plates.

4. A wrench comprising a handle and body portion, the latter having two jaws and a series of plates between said jaws that are separately movable away from said jaws, and a sliding actuating part adapted to engage all of said plates to move them simultaneously into position between said jaws and to permit said plates to be moved separately away from said jaws.

5. A wrench comprising a handle and body portion, the latter having two jaws and a series of plates between said jaws that are separately movable away from said jaws, a member adapted to move all of said plates simultaneously into position between said jaws and to be moved into its retracted position by any of said plates, and means for exerting a drag on said plates severally.

6. A wrench comprising a handle and body portion, the latter having a recess, a series of plates within said recess, separately movable in one and the same direction, and a spring-actuated member within said recess, adapted to reset all of said plates at once to their outermost positions.

7. A wrench comprising a handle and body portion, the latter having a recess, a series of plates within said recess, separately movable in one and the same direction, a resetting bar also within said recess and behind said plates and also movable in the direction of movement of said plates for resetting said plates, and a spring also within said recess behind said resetting bar adapted to hold said bar yeildingly in its outermost position.

WILLIAM J. HANNA.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."