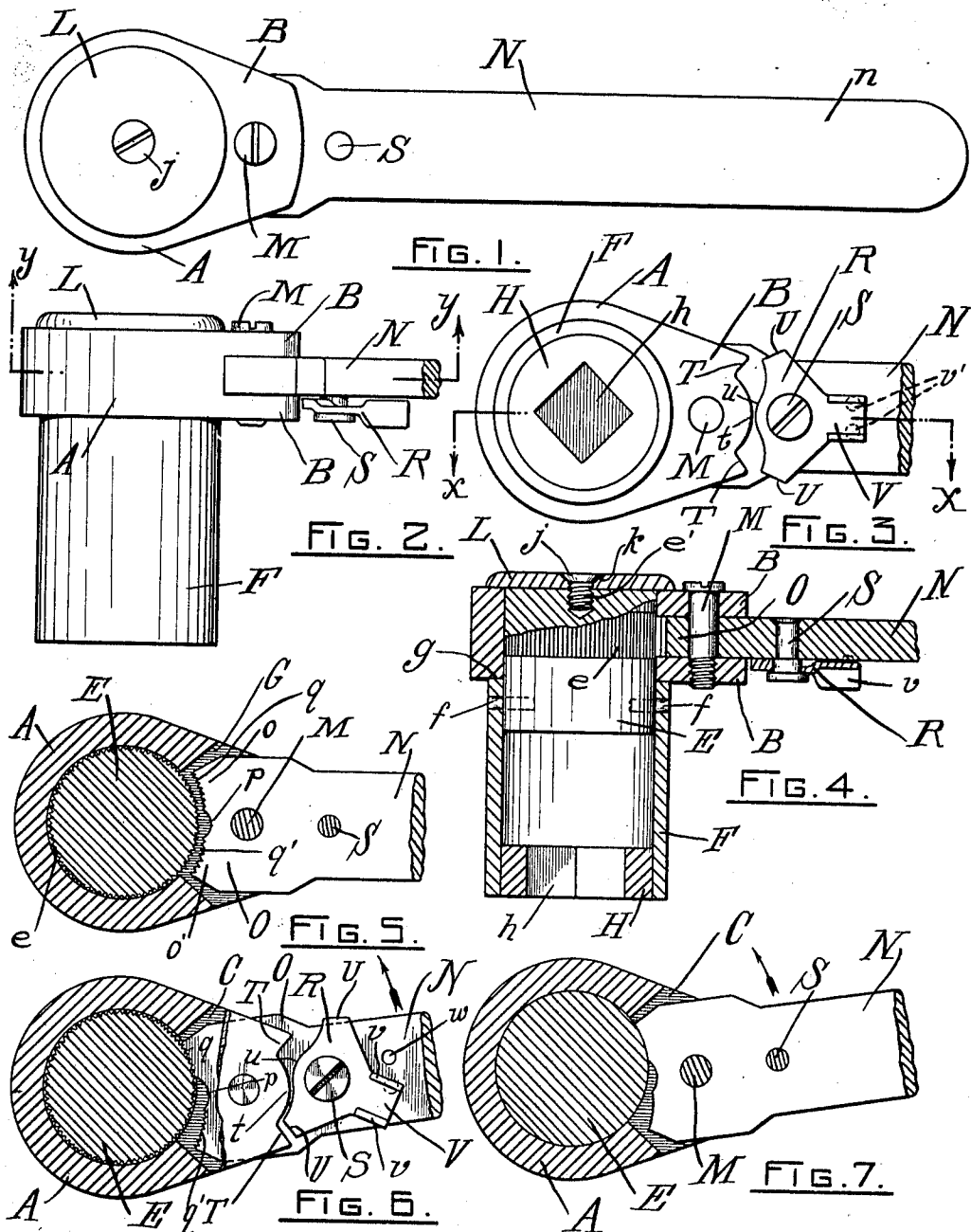


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 RATCHET WRENCH.  
 APPLICATION FILED NOV. 2, 1911.

1,019,825.

Patented Mar. 12, 1912.



WITNESSES.  
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# UNITED STATES PATENT OFFICE.

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## RATCHET-WRENCH.

1,019,825.

Specification of Letters Patent. Patented Mar. 12, 1912.

Application filed November 2, 1911. Serial No. 658,169.

*To all whom it may concern:*

Be it known that I, FRANK MOSSBERG, a citizen of the United States, residing at Attleboro, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Ratchet-Wrenches, of which the following is a specification.

My invention relates to ratchet wrenches and has for its essential objects adaptability for movement in opposite directions; capacity for a maximum of leverage with a minimum of strain; to remove the load from the teeth and insure necessary resistance in even a small head; means for adjustably determining the travel of the parts in opposite directions; and facile assemblage of parts.

To the above ends essentially my invention consists in such novel parts and combinations of parts as fall within the scope of the appended claims.

In the accompanying drawings which form a part of this specification, Figure 1, is a plan view of my novel wrench, Figs. 2 and 3, a side and bottom plan elevation respectively of the same with a portion of the handle broken away, Fig. 4, a section on line  $x, x$ , of Fig. 3, Fig. 5, a section on line  $y, y$ , of Fig. 2, Fig. 6, a like section of the same with the parts in another position and with parts in elevation, and Fig. 7, a similar section of a modified form of my invention.

Like characters of reference indicate like parts throughout the views.

My invention comprises an annular keeper A provided with interspaced ears or bearings B intermediate which the keeper is cut away to form an arcuate opening C in the wall of the keeper.

Loosely mounted in the keeper is a nut engaging member comprising a solid cylindrical head portion E, provided with an annular arranged series of small teeth  $e$  in horizontal alinement with the opening or slot C; also a hollow body portion F integral with the head portion or fixed thereto by pins  $f$ . The body portion F is of greater diameter than the head portion E, and thus forms an annular shoulder  $g$  adapted to abut against the lower face of one of the ears B. Integral with or fixed in the lower inner margin of the portion F, frictionally or otherwise is a block H pro-

vided with a squared opening  $h$  to receive the nut or other article to be operated upon.

It is desirable that the nut engaging member be readily removed for substitution of similar members of differing sizes, and this object is facilitated by the following device. The upper surface of the head E is provided with a central threaded cavity  $e'$  adapted to receive a screw  $j$  passing through an opening  $k$  in the center of a circular plate L, the margin of whose lower face rests upon the upper face of the keeper. The plate and shoulder serve to position the nut engaging member in the keeper while not interfering with the rotary movement of the former. Upon a pin M in the ears B is pivoted a lever N whose outer portion forms a handle  $n$ . The inner end portion O of the lever extends into the opening C in the keeper, and is provided with two similar concave faces  $o$  and  $o'$  interspaced from each other by a centrally located cavity  $p$ . The faces  $o$  and  $o'$  are, as shown in Fig. 5, near the surface of the head E. The radii of faces  $o$  and  $o'$  are equal to each other and equal to the radii of the head E, but the arcs of the faces  $o$  and  $o'$  are not co-centric with each other. Therefore when the lever N is vibrated in either direction the face  $o$  and  $o'$ , as shown in Fig. 6, has its entire area in contact with the head E, and thus insures a much more powerful grip of the parts than could be attained by means of a cam surface or otherwise. The faces  $o$  and  $o'$  are preferably provided with fine teeth  $q$  and  $q'$  respectively adapted to engage the teeth  $e$  of the head E. In Fig. 7, is shown a structure similar to that described in which the teeth are omitted.

It will be observed that by virtue of the double or interspaced arrangement of the faces  $o$  and  $o'$  equidistant from the central cavity  $p$ , it is possible for the lever N to operate the nut engaging member in either direction desired.

To reverse the action of the wrench a stop device is employed. In the present instance it consists of a stop dog or plate R pivoted on a pin S in the lever N to the under face of the lever adjacent the rear of one of the ears B. The latter is provided upon its rear end with inwardly inclined shoulders T separated by a curved intermediate portion  $t$ . The plate R com-

prises end shoulders U and a curved intermediate portion *u*. A rearwardly directed arm V upon the plate R has downwardly directed flanges or finger pieces *v* and two interspaced projections V' adapted to register in corresponding cavities *w* in the lever N.

When the wrench is intended to operate only in the direction of the arrow, as shown in Fig. 6, the plate R is by the flanges *v* swung so that one of the shoulders U is brought opposite one of the shoulders T which insures that the surface *o'* shall not during vibration of the handle engage the surface of the member E.

What I claim is,—

1. In a ratchet wrench, the combination with a keeper provided with an opening in its side, of a nut engaging member comprising a cylindrical head portion mounted in the keeper, and a body portion extending below the keeper and provided with a shoulder abutting against the keeper, a plate fixed to the head portion overlapping the keeper, ears upon the keeper adjacent the opening a lever pivotally mounted in the ears and entering the opening and adapted to engage the head portion when the lever is vibrated, and a stop plate pivotally mounted upon the lever adapted to engage one of the ears when the lever is vibrated.

2. In a ratchet wrench, the combination with a keeper provided with an opening in its side, of a nut engaging member rotatably mounted in the keeper, ears upon the keeper above and below the opening, one of said ears being provided with interspaced shoulders, a lever pivotally mounted in the ears and entering the opening adapted to engage the nut engaging member when the lever is vibrated, and a stop plate pivotally

mounted upon the lever provided with lateral shoulders adapted to alternately engage the first mentioned shoulders when the stop member is oscillated.

3. In a ratchet wrench, the combination with a keeper provided with an opening in its side, of a nut engaging member rotatably mounted in the keeper, journal ears upon the keeper adjacent the opening, one of said ears being provided with interspaced shoulders, a lever pivotally mounted in the ears and entering the opening adapted to engage the nut engaging member when the lever is vibrated, and a stop plate pivotally mounted upon the lever provided with lateral shoulders adapted to alternately engage the first mentioned shoulders when the stop plate is vibrated, an arm upon the stop plate, interspaced projections upon the stop plate, said lever being provided with recesses adapted to receive the projections.

4. In a ratchet wrench, the combination with a keeper provided with an opening, of a cylindrical nut engaging member rotatably mounted in the keeper, ears upon the keeper adjacent the opening, a vibratory lever pivotally mounted in the ears and extending into the opening and provided upon its forward edge with interspaced concave faces eccentric to each other and corresponding in curvature to the curvature of the nut engaging member and adapted to alternately engage the periphery of the nut engaging member when the lever is vibrated.

In testimony whereof I have affixed my signature in presence of two witnesses.

FRANK MOSSBERG

Witnesses:

FRANK STEERE,  
HORATIO E. BELLOWS.