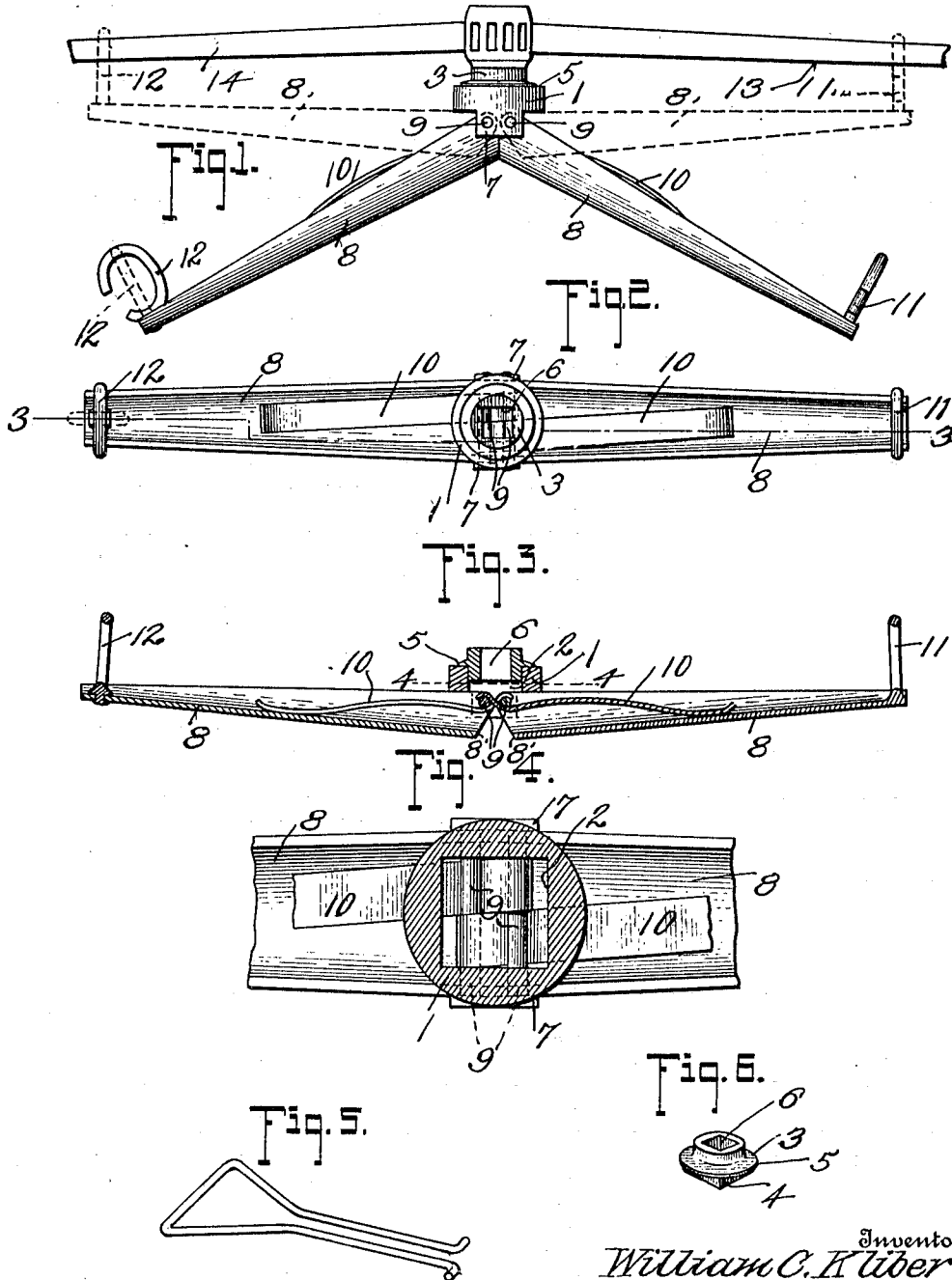


W. C. KLIBER.
 AXLE NUT WRENCH.
 APPLICATION FILED MAR. 16, 1912.

1,048,707.

Patented Dec. 31, 1912.



Witnesses
E. H. Wagner.
J. W. Kirkley

Inventor
William C. Kliber
 By *Beeler & Cobb*
H. C. Cobb Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM C. KLIBER, OF FEDERALSBURG, MARYLAND, ASSIGNOR TO LOUIS ST. JAMES,
OF FEDERALSBURG, MARYLAND.

AXLE-NUT WRENCH.

1,048,707.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed March 16, 1912. Serial No. 684,267.

To all whom it may concern:

Be it known that I, WILLIAM C. KLIBER, a citizen of the United States, residing at Federalburg, in the county of Caroline and State of Maryland, have invented certain new and useful Improvements in Axle-Nut Wrenches, of which the following is a specification.

This invention relates to improvements in axle-nut wrenches, its particular object being to provide a simple and efficient device adapted to so cooperate with an axle-nut and a vehicle wheel that the nut may be removed and replaced in position by movement of said wheel.

Specifically, my invention embodies a nut engaging member having connected therewith resilient arms which, when applied to a wheel to be removed, effectually unscrews the axle-nut when said wheel is rotated. While the invention is thus applied to the wheel the nut is firmly held in its proper relative position against the wheel hub so that in replacing the wheel on the axle the necessity of handling the nut as well as steering or starting the same on the axle is eliminated.

My device also comprises a removable nut socket, so that when it is desired to use the wrench on different characters of vehicles employing various sized axle-nuts, the proper fitting may be easily and quickly placed in the wrench and no other adjustment is required.

For a full understanding of the present invention, reference is to be had to the following description and the accompanying drawings, in which—

Figure 1 is a view showing a portion of a vehicle wheel and the manner of applying my wrench thereto; Fig. 2 is a plan view of the wrench; Fig. 3 is a longitudinal sectional view therethrough, on the line 3—3 of Fig. 2; Fig. 4 is a sectional view taken about on the line 4—4 of Fig. 3 and showing the mounting of the springs on the pivots of the arms, said springs and arms being broken away; Fig. 5 is a perspective view of an implement which may be used for the removal of the nut socket; and Fig. 6 is a perspective view of the nut socket alone.

Throughout the following detail description and on the several figures of the draw-

ings, similar parts are referred to by like reference characters.

Referring to the drawings, 1 designates a central head having a substantially square opening 2 therein to receive the nut-socket 3, which is provided with a square shouldered portion 4 adapted to be inserted in the opening 2 of the head. The member or socket 3 is provided with an annular flange 5 which normally seats against the inner face of the head 1, and the opening 6 in the socket 3 is of such a size as to fit a certain size axle-nut with which it is used. Opposite the side in which the removable socket 3 is inserted, the head 1 is formed with spaced integral ears 7 between which are pivotally mounted the opposing arms 8 of similar shape and construction, each being mounted on a pivot pin 9.

The arms 8 may be of any desired shape or form but as illustrated in the drawings are preferably semicircular and taper somewhat toward their outer extremities. Positioned within the concave portion of each of said arms is a leaf spring 10 mounted at one end thereof on one of the pivot pins 9 and passing beneath the pivot pin 9 of the opposite arm, the outer end of the spring bearing against said opposite arm intermediate the extremities of the latter, as clearly shown in Figs. 2 and 3 of the drawings. As will be obvious, the tendency of the springs 10 is to cause the arms to move outward and each arm is sufficiently cut away near its pivotal connection, as indicated at 8', so that the arms will be free to move a certain distance under pressure of the springs, or until such movement is limited by the abutment of the contiguous cutaway portions above mentioned. At the outer end of one of the arms 8 is provided a stationary spoke engaging hook 11, while the other arm is provided with a swiveled spoke engaging hook 12 at its outer extremity.

In the use of my invention, as thus described, the hook 11 is engaged over a spoke 13 of a vehicle wheel, and the socket 3 inserted on the axle-nut. The opposing arm is then pressed inwardly against the tension of the springs 10 and the swiveled hook 12 turned into engagement with the spoke 14 on the opposite side of the wheel. The tendency of the springs 10 is then to retain the

wrench in position on the wheel as well as serving to hold the axle-nut tightly against the wheel hub when said wheel is being removed or replaced in its proper position on the spindle. By rotation of the wheel in one direction the axle-nut may be unscrewed and the wheel removed for the purpose of lubricating the spindle, or otherwise. When the wheel is again replaced on the spindle, rotation thereof in the opposite direction to that above described will screw the axle-nut on the axle, without any necessity of handling the former or coming in contact with the grease usually found thereon. The wrench may then be disengaged with respect to its application to the wheel and removed. If it is desired to use the wrench in connection with a different vehicle employing another size of axle-nuts it is only necessary to insert in the opening 6 in the nut socket an implement such as is shown in Fig. 5, by means of which said socket may be withdrawn and the proper size nut socket inserted in its place. It will be understood, however, that under ordinary conditions the sockets will be loosely positioned in the head 1 so that it will not be absolutely necessary to use any auxiliary removing means therefor. This construction of nut-socket is found to be more desirable than those employing adjusting means which require special adjustment on nuts when placed in position for the removal of the same from axles, and from a manufacturing standpoint the wrench herein disclosed can be more cheaply and easily made.

My particular construction of wrench permits it to be used very readily when it is desired to remove the nut alone without removal of the wheel, in which case the arms 8 act as handles for the manipulation of the head 1. In construction heretofore employed this would be difficult, having in view the fact that the spoke engaging members would not permit of their use in this manner. The cutaway portions permit the arms to assume such a position as to afford considerable leverage in the operation above described, as will be appreciated by reference to Fig. 1 of the drawings.

It will be obvious that various changes may readily be made in the shape and details of construction without departing from the spirit of my invention and within the scope of the claims appended hereto.

Having thus described the invention, what is claimed as new is:

1. An axle nut wrench comprising a head having nut engaging means at its inner end, substantially rigid arms pivotally connected at one end to said head and extending outwardly and rearwardly from the side of the head opposite the nut engaging means aforesaid, said arms being adapted to be engaged with a vehicle wheel, spoke engaging members mounted on the free ends of said arms, and elastic means for holding said arms in their outwardly extending position.

2. An axle-nut wrench comprising a head having an opening therein to receive a nut, opposing arms pivotally connected with said head and adapted to be engaged with a vehicle wheel, and means mounted on the pivots of said arms and normally exerting pressure thereagainst whereby the nut may be firmly held in contact with the wheel, when the arms are engaged therewith.

3. An axle-nut wrench comprising a head having an opening therein to receive a nut, a pair of arms pivotally connected to said head, spoke engaging members carried by said arms, a spring mounted at one end on one of the pivots of the arms aforesaid and bearing against the opposite arm at the other end of said spring, the spring tending to hold the nut in position against the wheel hub when the spoke engaging members are engaged with the wheel.

4. An axle-nut wrench comprising a head, a removable nut socket carried thereby and adapted to receive a nut, a pair of arms pivotally connected to said head and cut-away at their contiguous ends, a stationary spoke engaging hook secured to one of the arms aforesaid, a swiveled spoke engaging hook mounted on the other arm, and a pair of springs each of which is mounted on a pivot of one of the arms, passing beneath the pivot of the opposite arm and bearing against the latter at its opposite end, whereby the nut may be held in its proper relative position against the wheel hub when the hooks are engaged with the spokes of the wheel.

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

WILLIAM C. KLIBER.

Witnesses:

C. W. JEFFERSON,
A. E. POOLE.