

No. 816,191.

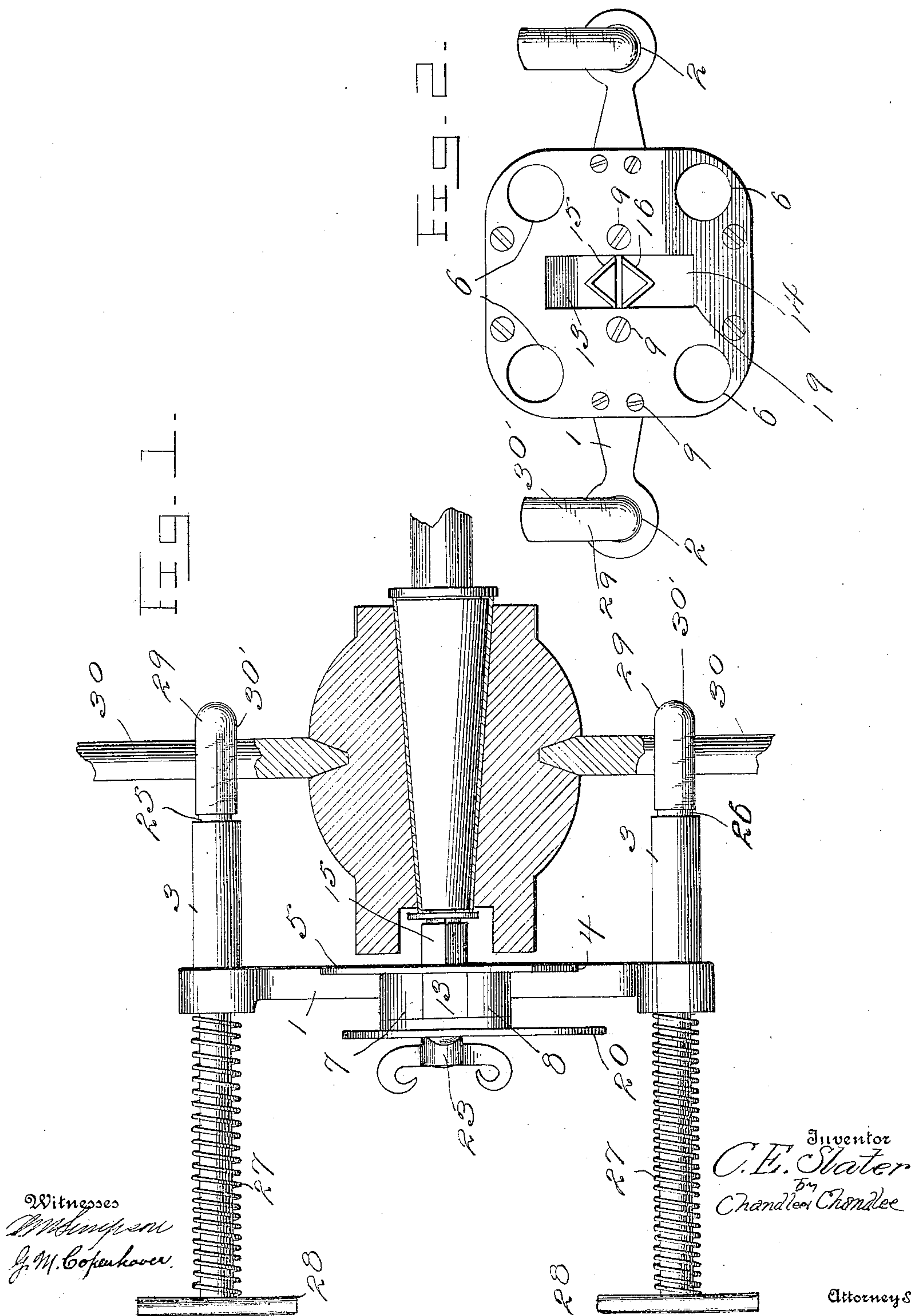
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C. E. SLATER.

## AXLE NUT WRENCH.

APPLICATION FILED DEC. 5, 1905.

2 SHEETS—SHEET 1.







# UNITED STATES PATENT OFFICE.

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## AXLE-NUT WRENCH.

No. 816,191.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed December 5, 1905. Serial No. 290,360½.

*To all whom it may concern:*

Be it known that I, CHARLES E. SLATER, a citizen of the United States, residing at Colebrook River, in the county of Litchfield, State of Connecticut, have invented certain new and useful Improvements in Axle-Nut Wrenches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to vehicle-axle-nut wrenches.

One object of the invention is to provide a wrench of the nature stated wherein there is employed a clamping device for securing the wrench to the nut and to the wheel-spokes.

Another object resides in the provision of a simple, inexpensive, durable, and efficient wrench to be attached to the wheel and nut in such manner that both may be quickly removed from the spindle and easily replaced without necessitating the manipulator soiling his hands by engagement with the nut.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings. Figure 1 is a sectional view of the invention, illustrating the application thereof to a vehicle-wheel. Fig. 2 is a top plan view. Fig. 3 is a transverse sectional view longitudinally through the guide. Fig. 4 is a detail view of one of the nut-engaging jaws.

Referring now more particularly to the accompanying drawings, the reference character 1 indicates a cross-head whose ends are reduced with respect to its intermediate portion and its extremities perforated, as at 2, for alinement with the corresponding tubular sleeve 3 at each end of the cross-head. These sleeves 3 may be cast or otherwise formed integrally with the cross-head or, if preferred, may have screw-threaded engagement therewith, as shown. The under face of the cross-head 1 is recessed, as indicated by the reference character 4, in which recess is fitted a plate 5, which may or may not have perforations 6. Spaced guide-blocks 7 and 8 are disposed upon the cross-head 1 intermediate its ends, and each guide-block has a recess in its under face, so that it may snugly engage the cross-head intermediate its ends and also snugly engage the aforesaid plate 5 at its extremities. These guide-blocks are secured to the plate 5 and to the cross-head 1 by means of suitable screw or other fasteners 9. Fitted upon the guide-blocks 7 and 8 and bridging the same is a plate 10, which is secured upon the said blocks by the same means employed for securing the blocks to the said cross-head and plate. The plate 10 is provided with oppositely-disposed slots 11 and 12, the slots being arranged in alinement with respect to each other and intermediate the inner faces of the guide-blocks 7 and 8. The guide-blocks 7 and 8 and the plate 10 form a guide for the reception of the respective shanks 13 and 14 of the nut-engaging jaws 15 and 16, the shanks having outwardly-directed projections 17 and 18, which project through the corresponding aforesaid slots 11 and 12 of the plate 10, so that the shanks 13 and 14 may be limited with respect to their inward and outward movement. It will thus be understood that the shanks 13 and 14 of the respective jaws are adapted to slide backwardly and forwardly toward and away from each other in the aforesaid guide and that the guide is open at both ends to permit of this movement of the shanks of the jaws. It will be observed that the jaws 15 and 16 are preferably V-shaped in section, and that since they are formed integrally with their respective shanks they consequently project through a slot 19, formed in the aforesaid plate 5 and arranged in alinement with the aforesaid guide-blocks 7 and 8 and the slots 11 and 12 of the plate 10. In order to accomplish the aforesaid movement of the jaws 15 and 16 and their respective shanks, I provide a cam-lever 20, whose body portion is provided with oppositely-arranged cam-slots 21 and 22, the cam-slot 21 fitting over the aforesaid projection 17 of the shank 13 and the slot 22 fitting over the projection 18 of the shank 14, the cam-lever itself being pivotally mounted upon the aforesaid plate 10 intermediate the slots 11 and 12. As a result of this mounting of the cam-lever and its engagement with the shanks of the jaws 15 and 16 the latter may be moved toward and away from each other for the purpose of engaging a nut or releasing them from the nut.



When the jaws are engaged with a nut and it is desired to hold them in engagement therewith, I provide a thumb-nut 23, adapted to be engaged upon the reduced end 24 of the projection 18 of the shank 14, so that it may be engaged firmly with the outer face of the body of the cam-lever and hold the latter firmly in any desired position.

To secure the wrench to the spokes of the wheel so that the wheel and nut may be removed or replaced together with respect to the spindle, I employ rods 25 and 26, one of which is mounted in each of the aforesaid sleeves 3 of the cross-head 1. Each rod has a longitudinal yielding movement in its respective sleeve by reason of the helical spring 27 encircling the corresponding rod between its cross-head 28 and the upper face of the cross-head 1. The inner end of each rod is provided with a hook 29 for engagement with the corresponding spoke of the wheel 30, each hook being preferably wrapped with a piece of rubber or other suitable material 30' to prevent scraping off of the paint of the spokes of the wheel, as well as to prevent possible slipping of the device. It will thus be seen that the rods 25 and 26 have a yieldable longitudinal movement with respect to their respective sleeves, so that the device may be connected to spokes of various sized wheels.

I will now state that instead of connecting the sleeves 3 detachably to the cross-head 1 and the guide-blocks 8 and 9 to the plates 5 and 10 and the cross-head all of these elements may be cast or otherwise formed of a single piece of material.

From the foregoing it will be readily appreciated that my improved vehicle-axle-nut wrench may be readily attached to or detached from wheels of vehicles of various sizes and that when the nut-engaging jaws are engaged with the nut and held immovably with respect thereto through the instrumentality of the thumb-nut of the cam-lever the wrench, together with the wheel and nut, may be readily moved over the spindle or placed thereupon without the necessity of the manipulator taking hold of the nut, and thereby soiling his hands with the grease usually found upon the nut.

What is claimed is—

1. A device of the character described comprising

a cross-head, a plate upon the cross-head, the plate having a longitudinal slot formed therein, guide-blocks crossing the cross-head and secured thereupon and the upper face of said plate, a plate arranged upon the outer faces of the guide-blocks and provided with spaced slots, clamping-jaws protruding through the longitudinal slot of the first-named plate and having their shanks arranged between the aforesaid guide-blocks, each shank having a projection extending through the corresponding slot of the second-named plate, a cam-lever pivotally mounted upon the second-named plate and provided with cam-slots adapted to embrace the corresponding projections of the shanks of the corresponding jaws to move the latter toward and away from each other, means engaged with the projection of one of the jaws for locking the cam-lever against movement, a sleeve disposed at each end of the cross-head, and a rod yieldably mounted in each of said sleeves and provided with a spoke-engaging hook.

2. A device of the character described comprising a cross-head, a sleeve at each end of the cross-head, a guide formed upon the cross-head, nut-engaging jaws having their shanks slidably mounted in said guide, means for moving the jaws toward and away from each other, means for locking the cam-lever against movement, and spoke-engaging rods mounted through said sleeves.

3. A device of the character described comprising a cross-head, a sleeve at each end of the cross-head, a guide mounted upon each cross-head, nut-engaging jaws mounted in the guide with their jaws projecting from one side of the guide and having projections directed from the other side of the guide, a cam-lever pivotally mounted upon the guide and provided with cam-grooves for engagement with the projections of the nut-engaging jaws, means for locking the cam-lever against movement, and yieldable spoke-engaging rods mounted in the aforesaid sleeves.

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

CHARLES E. SLATER.

Witnesses:

ELAM SLATER,  
WILLIAM W. WELLER.