

J. H. & C. H. ALLEN.  
RIM WRENCH OR TIRE BOLTER.

Patented Jan. 14, 1896.





# UNITED STATES PATENT OFFICE.

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## RIM-WRENCH OR TIRE-BOLTER.

SPECIFICATION forming part of Letters Patent No. 552,977, dated January 14, 1896.

Application filed April 11, 1895. Serial No. 545,309. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES H. ALLEN and CHARLES H. ALLEN, citizens of the United States, residing at Seneca, in the county of La Salle and State of Illinois, have invented a new and useful Rim-Wrench or Tire-Bolter, of which the following is a specification.

This invention relates to an improvement in devices for manipulating the nuts of tire-bolts.

The object of the present invention is to provide a machine-wrench by means of which the nuts of the bolts which secure the tires to the rims or felloes of vehicle-wheels may be quickly and easily applied or removed, which shall be simple and inexpensive in construction, operate efficiently both to clamp the bolt to hold it from turning, and to revolve the nut for threading or unthreading it, and which shall also be quickly and easily adjustable to bolts of different sizes and lengths, thereby rendering the same tool capable of being used on rims and tires of different sizes and thicknesses.

To this end the invention consists in the combination with a rod or bar of a fixed and stationary jaw mounted thereon, a sliding jaw adapted to move lengthwise thereon, and a lever connected with and adapted to operate said sliding jaw; in the particular means for operating the device and the manner of mounting the crank-shaft in the stationary and movable jaws; in the manner of accommodating the device to wheels of different diameter and size; and in certain features and details of construction and arrangement of parts hereinafter fully described, illustrated in the drawings, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of my improved rim-wrench or tire-bolter complete. Fig. 2 is a plan view of the same, showing the manner of applying the same to a wheel-rim, a portion of the wheel and hub being shown in dotted lines. Fig. 3 is a longitudinal section through the wrench, showing the manner of attaching and securing the chuck.

Similar numerals of reference indicate corresponding parts in the several figures of the drawings.

Referring to the drawings, 1 designates an

arm or bar preferably of wood, provided with an elongated slot 2, adapted to receive and stride a bolt or pin projecting upwardly from said arm and passing through or partially through the axle-box of the wheel to be operated upon. A metallic bar 3, preferably rectangular in cross-section, is bolted to the outer end of the slotted arm 1 by means of two connecting-bolts 4 and 5 or in any other convenient manner.

Upon the outer end of the bar 3 is located a stationary jaw 6, comprising a base portion 7, provided with a rectangular perforation 8, extending entirely through the same for adapting said stationary arm to fit snugly upon the bar 3. The stationary jaw 6 is secured to the bar 3 by means of a bolt 9, which passes through the base portion 7 of the stationary jaw and also through a perforation in the bar 3. The stationary jaw 6 also comprises an upwardly-extending arm 10, which is provided with two horizontal perforations 11 and 12 for the reception of the operating crank-shaft, and the threaded and adjustable center-pin hereinafter described.

A jaw 13 similar to the stationary jaw 6 in construction is provided with a rectangular perforation 14, by which it is adapted to receive and slide lengthwise upon the bar 3, above described. The sliding jaw 13 also comprises an upwardly-extending arm 15, which is provided with perforations 16 and 17 in alignment with the perforations 11 and 12 in the stationary jaw.

The operating or shifting lever 18 is pivoted to the stationary jaw upon the bolt 9, which connects said stationary jaw with the bar 3, and the said lever is connected with the sliding jaw by means of a link 19, which is secured at one end to a short stud-bolt on the base of the sliding jaw, and at its other end to the operating-lever just outside of the pivotal connection of said lever to the stationary jaw by means of a pivotal bolt or rivet 20, as shown. By vibrating the lever 18 the sliding jaw 13 will be moved back and forth lengthwise of the bar 3, in a manner that will be easily understood.

The operating-shaft 21 passes through the perforation 11 in the stationary jaw and also through the perforation 16 in the sliding jaw, and is provided at its forward end with a



crank-arm 22 and suitable handle 23 for rotating said shaft. At the other end the shaft 21 is provided with a spur-gear keyed thereto, and a pin 24 passing through a perforation in said shaft on the opposite side of the sliding jaw to that on which the spur-gear is located serves to keep the operating-shaft 21 and spur-gear 25 in their proper relation to said sliding jaw when the latter is adjusted back and forth on the bar 3, the shaft 21 being adapted to slide through the perforation 11 in the stationary jaw.

In the upper end of the sliding jaw 13 and in the perforation 17 thereof is mounted a short shaft 26, provided on one end with a spur-gear 27 similar to and meshing with the gear 25 on the corresponding end of the operating-shaft. Upon its opposite end the shaft 25 is provided with a wrench or head provided with a polygonal socket, which is adapted to engage the nuts on the inner face of the rim of the wheel, and which is also adapted to receive a detachable chuck, provided with a polygonal shank adapted to enter the corresponding socket in the wrench or hub 28 and to be secured therein by means of a pin 29 passing through a perforation 30, as shown. In the corresponding perforation 17 in the end of the stationary jaw 6, a threaded center-pin 31 is mounted, and adapted to be adjusted toward and away from the wrench or hub 28, by means of a hand-wheel 32 keyed upon the outer end thereof. The inner end of the centering-pin 31 has a conical point which is adapted to bear against the head of a rim-bolt and prevent the same from turning while the nut thereof is being threaded or unthreaded by the revolving wrench 28.

In operation the device is adjusted in such manner as to bring the rim of the wheel between the center-pin 31 and the wrench 28. The center-pin is now adjusted inwardly until its point engages the end of the rim bolt to prevent the same from turning. The operating-lever is now adjusted until the wrench 28 is caused to embrace the nut on the inner end of the rim-bolt. By now rotating the shaft the nut may be threaded or unthreaded in a manner that will be readily understood.

Various changes in the form, proportion,

and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, we claim—

1. In a machine wrench, a supporting bar, and a slotted arm for securing the same upon a wheel hub, in combination with a stationary jaw secured to said bar, a sliding jaw movable lengthwise of said bar, means for adjusting the sliding jaw toward and away from the stationary jaw, an operating shaft journaled in both jaws, and a chuck operatively geared to said shaft and adjustable with the sliding jaw, substantially as described.

2. In a machine for threading and unthreading rim nuts, a supporting bar, in combination with a stationary jaw mounted thereon, a sliding and adjustable jaw also mounted thereon, a lever for adjusting said sliding jaw, a chuck carried by said sliding jaw and geared to the operating shaft, and a threaded center pin mounted in the stationary jaw and provided at one end with a tapering point adapted to engage a rim bolt for preventing the same from turning and having at its other end an operating wheel fast thereon, all arranged substantially for the purpose described.

3. In a machine wrench, a stationary jaw, and a movable jaw, both provided with perforated bases for the reception of and in combination with a supporting bar, means for adjusting the movable jaw relatively to the fixed jaw, a chuck or wrench mounted in said movable jaw, an operating shaft mounted in said stationary and movable jaws and adjustable lengthwise with the sliding jaw, and a slotted arm bolted to the supporting bar, all arranged for joint operation, substantially in the manner and for the purpose specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

JAMES H. ALLEN.  
CHARLES H. ALLEN.

Witnesses:

A. E. HANES,  
GEO. L. DAVISON.