(No Model.)

# J. A. ROSS.

## TIRE BOLT WRENCH.

No. 456,778. Patented July 28, 1891.

Fig-1.

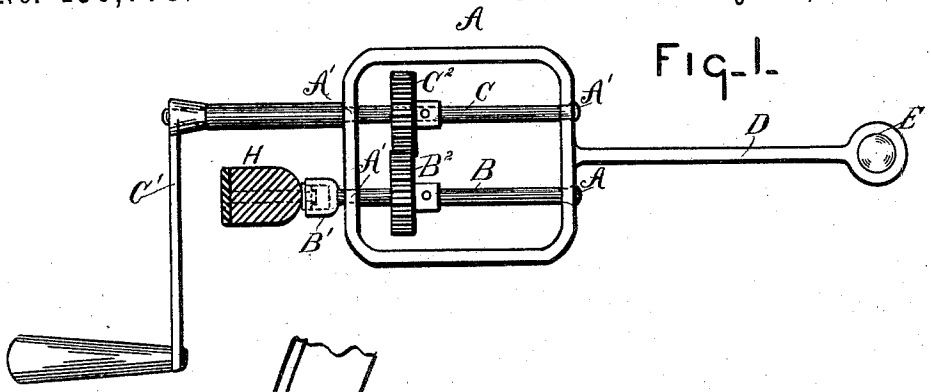



Fig-2

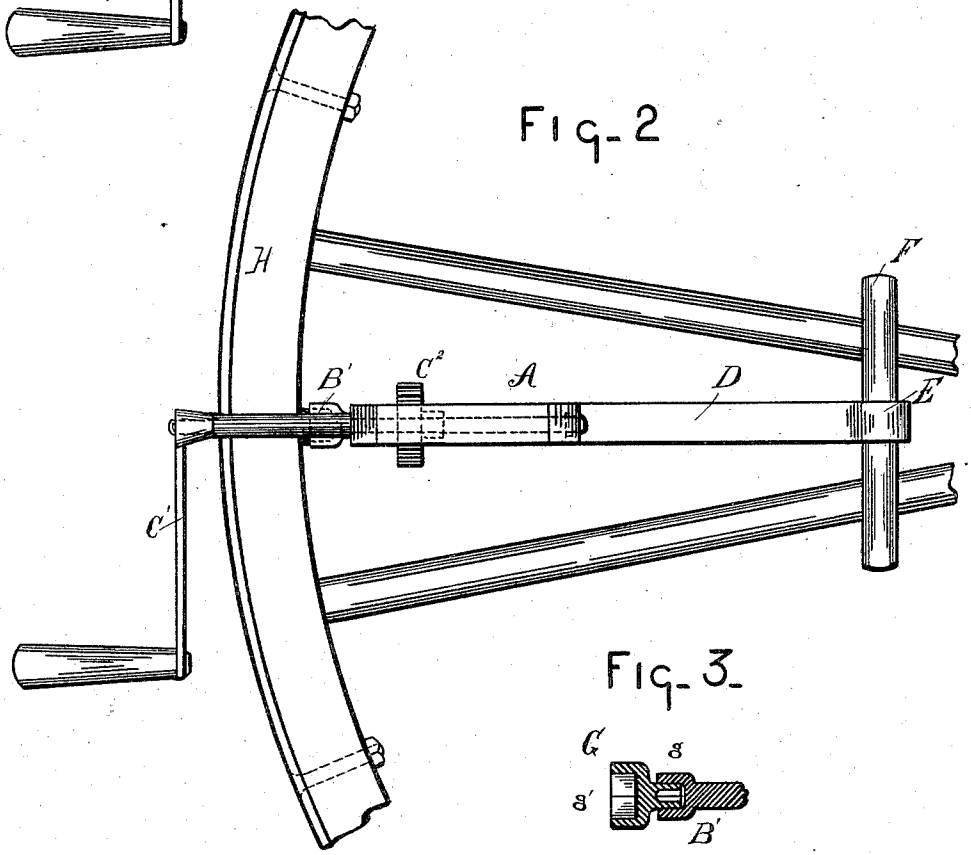



Fig-3.




WITNESSES

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# UNITED STATES PATENT OFFICE.

JAMES A. ROSS, OF SMITH'S CREEK, MICHIGAN.

## TIRE-BOLT WRENCH.

SPECIFICATION forming part of Letters Patent No. 456,778, dated July 28, 1891.

Application filed February 5, 1891. Serial No. 380,296. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES A. ROSS, a citizen of the United States, residing at Smith's Creek, county of St. Clair, State of Michigan, have invented a certain new and useful Improvement in Tire-Bolt Wrenches; and I do 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

In the drawings, Figure 1 represents a side elevation of the device embodying my invention. Fig. 2 is a plan view of the same when in position for use. Fig. 3 is a separate view of the supplementary wrench-head.

In carrying out my invention, A represents a frame, and A′ the yoke-bearings for the wrench-shaft and the actuating crank-shaft.

B is the wrench-shaft.

C is the actuating crank-shaft.

B′ is the wrench-head, and C′ is the actuating-crank.

$B^2$ and $C^2$ are meshing pinions upon the said shafts, and these pinions are of such diameter that the distance between the shafts adapts the crank-shaft to pass above or below the tire of the wheel when the wrench-head is embracing a nut.

D is an arm projecting from the frame A.

E is an eye at the end of the arm D.

F is a rod passing through the eye E.

In operating my device the wrench-head is placed over the nut to be turned, and the rod F rests upon the spokes of the wheel H. The actuating-crank imparts motion to the crank-shaft, and the meshing pinions and the wrench-shaft transmit this motion to the wrench-head, and the nut is turned either onto the bolt or off from the bolt, as may be desired.

The wrench-head can be kept in engagement with the nut by a steady hand-pressure at E, and as the nut goes onto the bolt the rod F will correspondingly slide along the spokes after the nut.

Since different-sized tire-bolts and nuts are sometimes used, I prefer generally to supply a supplementary wrench-head G to go with my device. This supplementary head is a double reversible head, having one end *g* adapted to fit into the wrench-head B′ and the other end *g′* adapted to fit down over the wrench-head B′, thus adapting the wrench for these various sizes of bolts or nuts.

What I claim is—

1. The combination, with a tire-bolt wrench comprising a frame A, wrench-shaft B, actuating-crank C′, and meshing pinions $B^2$ $C^2$, all arranged as and for the purposes described, of a projecting arm D, provided with an eye E, and a cross-bar F, passing through said eye, said cross-bar being adapted to rest upon the spokes of the wheel when the wrench is in operation, substantially as described.

2. The combination, with a wrench-head, of a supplemental double reversible head, one adapted to fit within the said wrench-head and the other adapted to fit on the outside of the said wrench-head, substantially as described.

3. A tire-bolt wrench consisting of a frame, with a cross-bar adapted to rest upon the spokes of the wheel, and a wrench-head, and, in connection therewith, a supplementary double reversible head, one adapted to fit within the said wrench-head and the other adapted to fit on the outside of the said wrench-head, a wrench-shaft, and a crank-shaft, said shafts journaled in a plane perpendicular to the cross-bar, and the crank-shaft adapted, by reason of the distance between itself and the wrench-shaft, to extend out beyond the periphery of the wheel, meshing pinions mounted upon the said shafts, and an actuating-crank engaging the crank-shaft outside the periphery of the wheel and adapted to be turned at right angles to the wrench-shaft, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

JAMES A. ROSS.

Witnesses:

MARION A. REEVE,

DELL J. BROWNE.