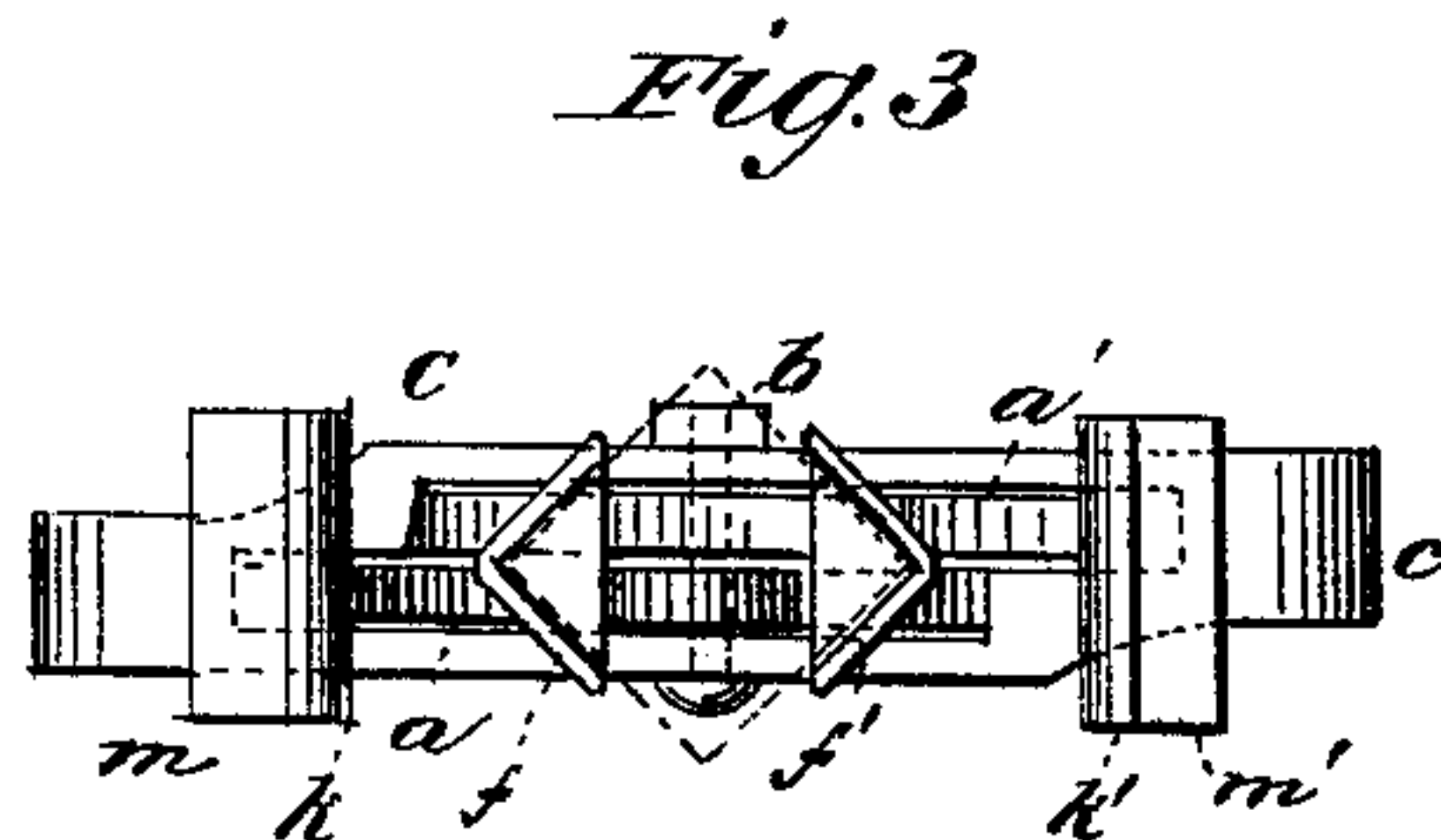
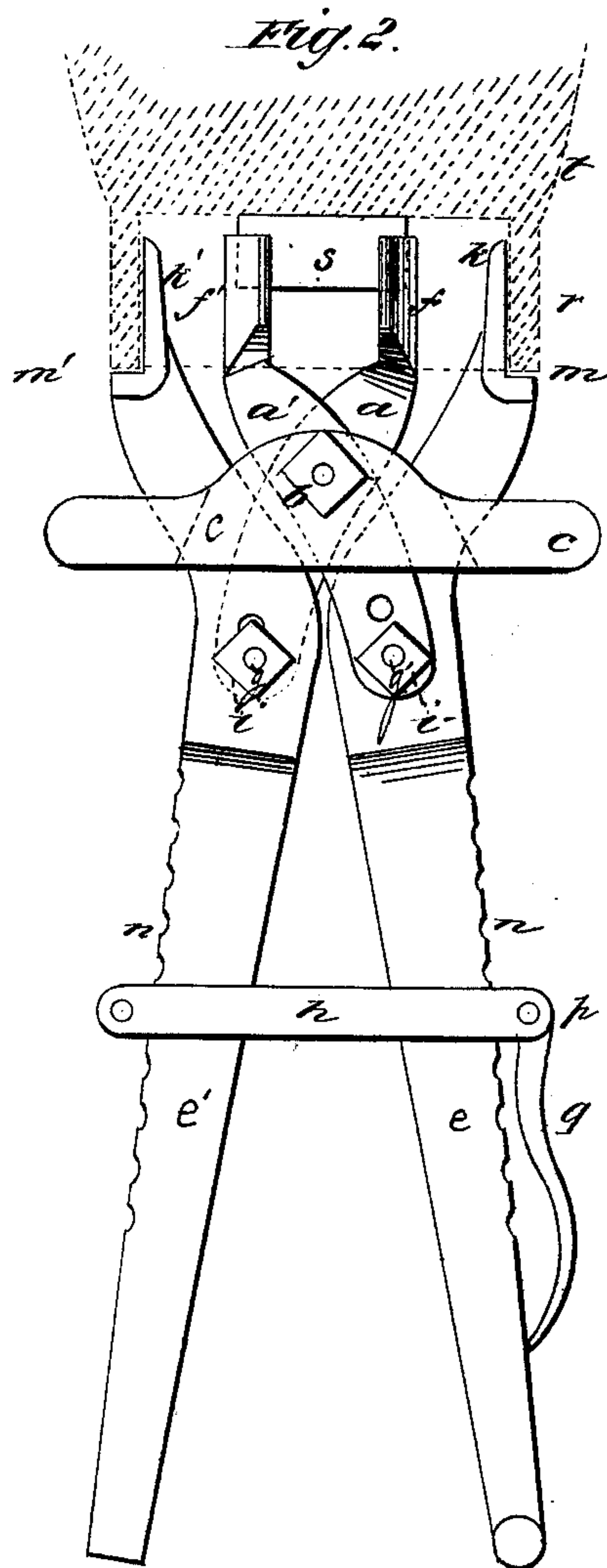
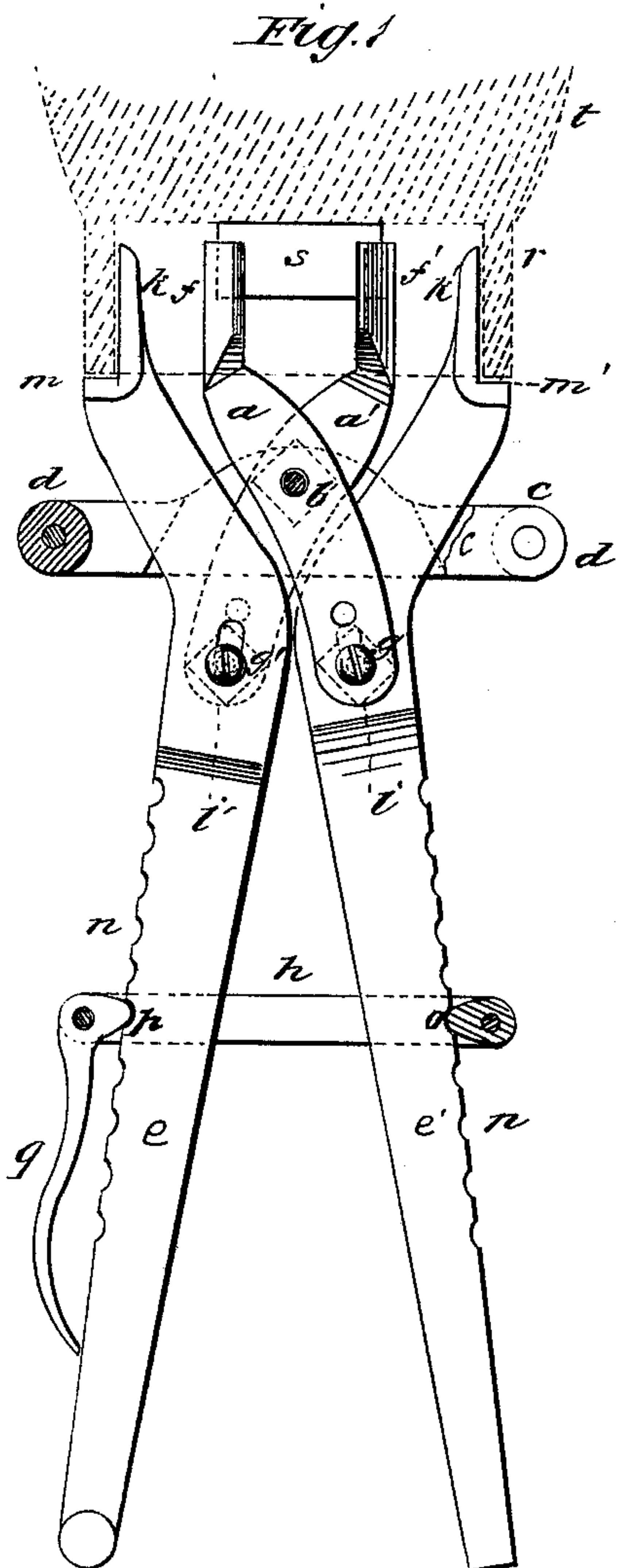


J. S. GIFFORD.
Axle-Nut Wrench.

No. 206,721

Patented Aug. 6, 1878.



WITNESSES:

Francis McCordle.
C. Sedgwick

INVENTOR:

J. S. Gifford
BY *[Signature]*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN S. GIFFORD, OF FAIRFIELD, MAINE.

IMPROVEMENT IN AXLE-NUT WRENCHES.

Specification forming part of Letters Patent No. **206,721**, dated August 6, 1878; application filed June 20, 1878.

To all whom it may concern:

Be it known that I, JOHN S. GIFFORD, of Fairfield, in the county of Somerset and State of Maine, have invented a new and Improved Wagon-Wrench, of which the following is a specification:

The object of my invention is to furnish a wrench which may be used to take off the nut from a wagon or carriage axle, to allow of the removal of the wheel, and to screw the nut on again, without any necessity of handling the nut, thereby avoiding the danger of getting sand in the bearing of the wheel or grease upon the hands of the person using the wrench.

My invention consists of a wrench which is applied to the nut on the axle, and clamps the nut firmly in the rim of the wheel, so that as the wheel is turned backward the nut is unscrewed until the wheel can be taken off, when the nut is securely held in the rim, and the wheel and nut may be put on together, and the nut screwed to its place by turning the wheel forward.

I use two short levers, pivoted crosswise and to a cross-bar. The outer ends of these levers are formed as jaws to clasp the nut, and the inner ends are each pivoted to a lever formed at one end as a handle for operating the wrench and at the other end so as to fit upon the inner periphery of the wheel-rim. The jaws of the short levers are placed upon the nut, and the outer ends or handles of the long levers are pressed toward each other until the opposite ends bear against the rim, when the further movement of the handles closes the cross-levers until the nut is clamped firmly. The handles are then kept from spreading by a link slipped over them, and the wheel and nut may then turn together.

In the drawing, Figure 1 is a side view of my wrench clamped to a wheel, and partially in section. Fig. 2 is a view at the opposite side, and Fig. 3 is an end view of the clamping-jaws.

Similar letters of reference indicate corresponding parts.

$a a'$ are levers, pivoted crosswise at b to a cross-bar or carrier, c . This carrier is formed of a plate at each side of the levers $a a'$, and the plates are connected at their ends by a

rivet and stud, d , so as to leave a space between the plates for the passage of the cross-levers $a a'$ and the operating-levers $e e'$.

The outer ends of the levers $a a'$ are formed as jaws $f f'$, adapted to clasp a nut between them, and at the opposite ends the levers $a a'$ are pivoted to the operating-levers $e e'$ by pins or screws $g g'$ passing through elongated slots in e and e' and secured by nuts $i i'$. There may be additional holes in the levers $a a'$, to allow for adjustment of $a a'$ by changing the pins $g g'$.

The operating-levers $e e'$ are made as flat bars, with the ends $k k'$ flattened, so as to take a broad bearing upon the inner periphery of the wheel-rim, (shown by dotted lines in the drawing,) and having shoulders $m m'$ to take against the edge of the rim. The levers $e e'$ carry the cross-levers $a a'$ in such a position that the jaws $f f'$ are between $k k'$. The opposite ends of the levers $e e'$ are extended to form handles for operating the wrench, and the outer edges of the handles are serrated at n ; and h is a holding-link, sliding loosely upon the levers $e e'$, having one end pointed at the inside, as at o , to mesh with the serrations n , and at the opposite end carrying a cam-stud, p , with a handle, q , so that the link h may be clamped firmly to the handles to prevent them spreading after a nut is clamped.

I have shown in the drawing by dotted lines a hub, t , with a rim, r , and nut s , and my improved wrench cramped thereto. To apply the wrench, the jaws $f f'$ and ends $k k'$ of the operating-levers are inserted within the rim r , and the levers $e e'$ pressed toward each other to cause the jaws $f f'$ to take upon the nut s . The handles of the levers $e e'$ are then forced inward, and as the jaws $f f'$ cannot close further, as they bear upon the nut s , the screws $g g'$ become fulcrums for levers $e e'$, and the ends $k k'$ are spread until they bear upon the inside of the rim r , when further pressure upon the handles clamps the nut and rim firmly together. The link h is then forced down upon the handles and the cam p turned by its handle q to clamp the levers $e e'$ firmly in position. The wheel may now be turned backward, and the nut being clamped to the rim, it is unscrewed from the axle, and remains in

the same position when the wheel is taken off. The wheel may be put on and nut screwed to its place by turning the wheel forward.

My wrench is easily operated, not liable to be broken, and the nut is more readily and quickly removed than it can be with ordinary wrenches, as the wheel has great leverage in unscrewing the nut; and there is no danger of getting dirt into the nut and upon the journal and bearing. The clamping-jaws adapt themselves to the position of the nut in case it is not central of the rim, so that it will be firmly held in the proper position when the wheel is off the axle.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A wagon-wrench having end jaws $f f'$, whose operating-levers $e e'$ have flattened ends $k k'$ and shoulders $m m'$, as shown and described, for the purpose specified.

2. The holding-link h , provided with cam-stud p and handle q , in combination with the wagon-wrench, substantially as described.

JOHN SUMMERFIELD GIFFORD.

Witnesses:

S. S. CHAPMAN,

F. L. EMERY.