(No Model.)

# W. LEHMAN.

## WRENCH.

No. 465,063. Patented Dec. 15, 1891.

FIG_1_

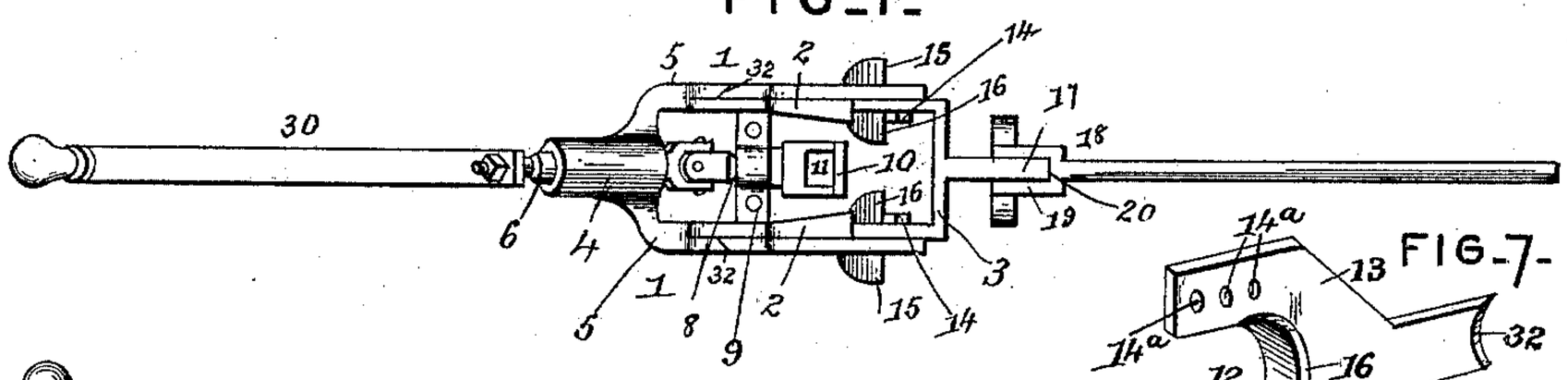



FIG_7_




FIG_2_

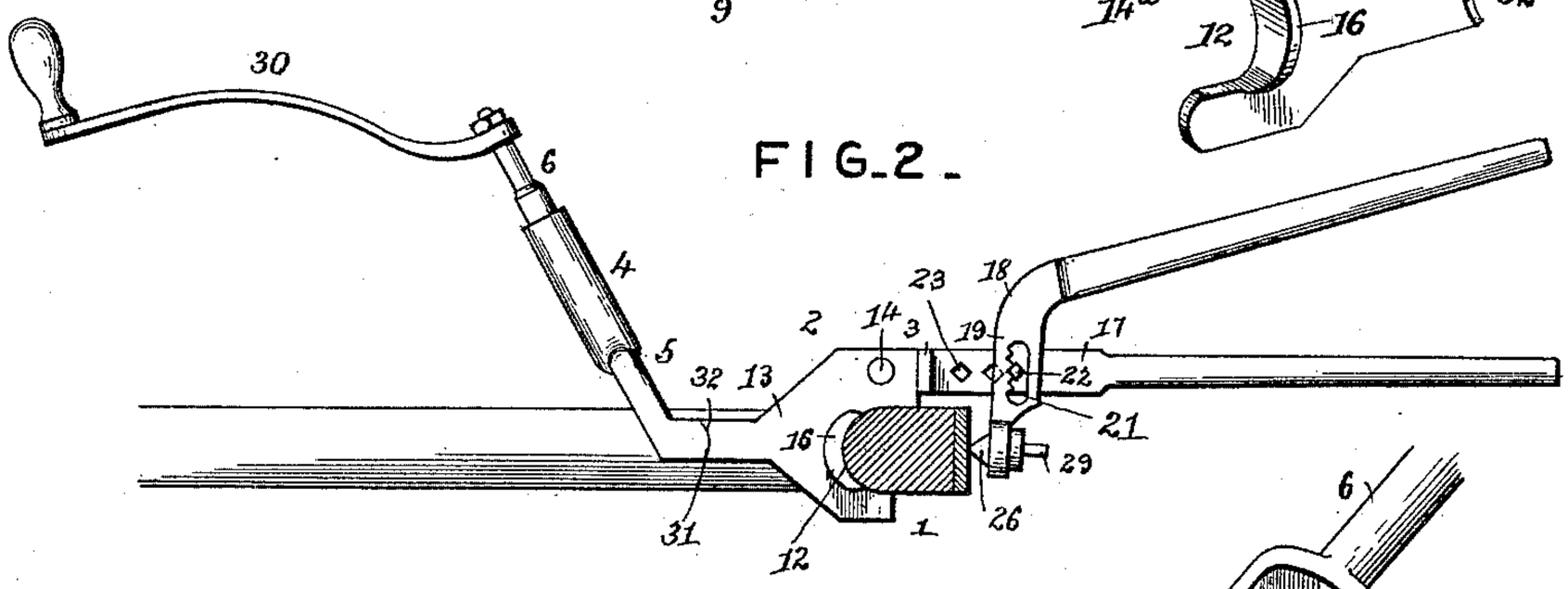



FIG_6_

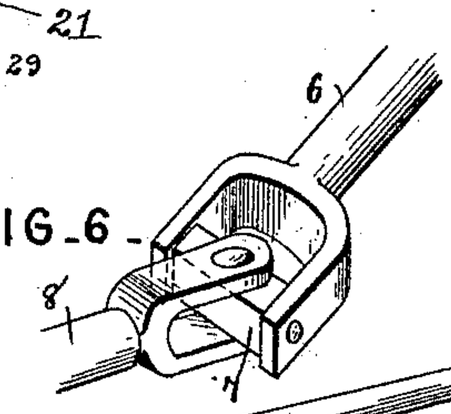



FIG_3_




FIG_4_

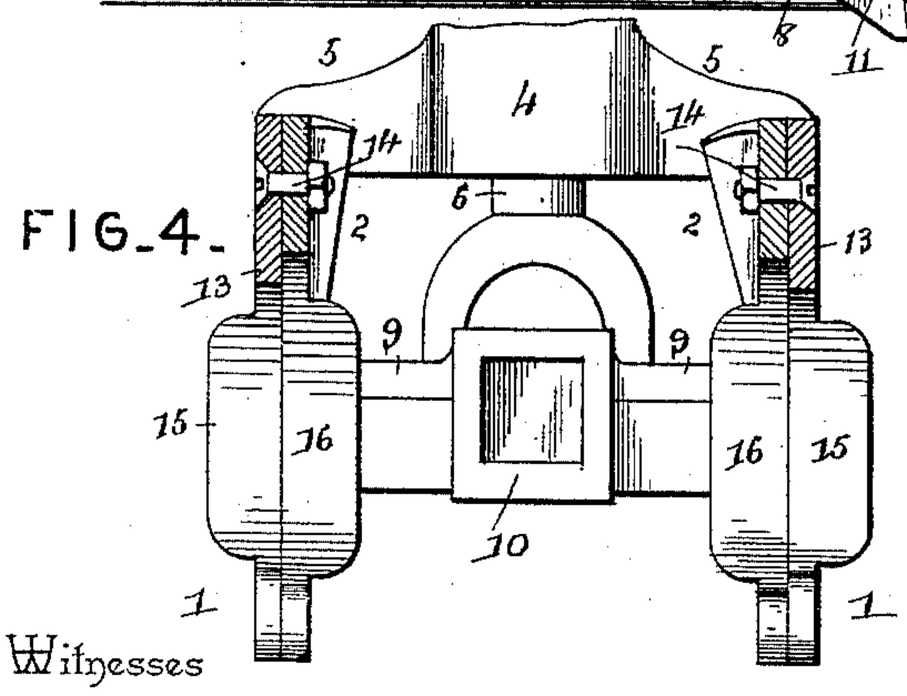
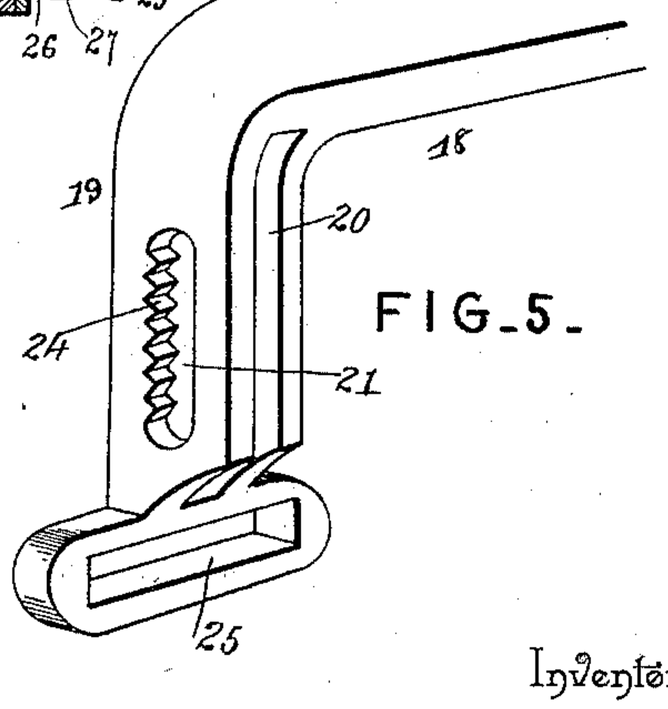



FIG_5_




Witnesses

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# UNITED STATES PATENT OFFICE.

WILLIAM LEHMAN, OF SEBEWA, MICHIGAN.

## WRENCH.

SPECIFICATION forming part of Letters Patent No. 465,063, dated December 15, 1891.

Application filed May 26, 1891. Serial No. 394,119. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM LEHMAN, a citizen of the United States, residing at Sebewa, in the county of Ionia and State of Michigan, have invented a new and useful Wrench, of which the following is a specification.

The invention relates to improvements in tire-bolt holders and wrenches.

The object of the present invention is to provide a simple and inexpensive tire-bolt holder and wrench adapted to be readily secured to a wheel and adjusted to the size of the felly thereof, and also to the position of the head of a tire-bolt, and capable of conveniently screwing and unscrewing the nuts of the tire-bolts.

The invention consists of the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a plan view of a tire-bolt holder and wrench constructed in accordance with this invention. Fig. 2 is a side elevation of the same, the device being shown applied to a wheel, the felly and tire being shown in section. Fig. 3 is a longitudinal sectional view. Fig. 4 is a transverse sectional view. Fig. 5 is a detail perspective view of the inner end of the lever. Fig. 6 is a detail view of the universal-joint connection between the inclined and horizontal shafts. Fig. 7 is a detail view of one of the adjustable plates.

Referring to the accompanying drawings, 1 designates a frame constructed of metal and consisting of sides 2 and an end bar 3, connecting the sides and provided at one end with an upwardly-inclined Y-shaped portion 4. The Y-shaped portion 4 has its arms 5 formed integral with the sides 2 of the casing, and its stem is provided with a cylindrical opening forming a bearing for a shaft 6, which has its inner end enlarged and bifurcated and pivoted to a block 7, which in turn is pivoted to a shaft 8, and the latter thereby connects the shaft 6 with shaft 8 and forms a universal joint. The shaft 8 is journaled in suitable bearings of a cross-bar 9 and has its inner end, which lies adjacent to the inner end of the shaft 6, enlarged and bifurcated similarly to the shaft 6, and the outer end of the shaft 8 is provided with a nut-socket 10. The nut-socket 10 has a square opening, and it is provided on opposite sides with openings 11, through which a nut may fall or be removed from the socket after taking from a bolt. The casing is provided at one end with curved recesses 12, which conform to the configuration of the curved face of a felly and are adapted to receive the same, and the recesses are diminished and adapted to receive smaller fellies by side plates 13, which conform to the configuration of the sides of the frame or casing 1 and are secured thereto by bolts 14. The outer faces of the side plates 13 and the inner faces of the sides of the frame are provided with enlargements 15 and 16, which increase the thickness of the metal at the recesses and provide a broad bearing-surface for the felly.

Extending from the frame at the end opposite the Y-shaped portion 4 is a bar 17, which has its outer portion formed into a handle and its inner portion squared and adapted to receive a lever 18. The lever is pivoted to the bar 17 and acts upon the same in the manner of a pair of tongs, and has its inner end 19 bent at an angle and provided with a longitudinal opening 20 and provided with slots 21, which receive the pivot 22. The bar 17 has its squared portion provided with a series of square perforations 23 to receive the square pivot 22 and to enable the same to be adjusted to bring the inner end of the lever nearer to or farther from the tire of a wheel, as may be found necessary or convenient, and the slots 21 in the lever 19 are provided with angular notches 24, adapted to receive an edge of the squared pivot to permit the end of the lever to be adjusted vertically.

The inner end of the lever is enlarged and provided with a transverse opening 25, in which is adjustably secured a beveled tooth 26, and the latter is adapted to engage the head of a bolt to prevent the bolt turning while a nut is being screwed on or off by the wrench. The tooth is provided with a stem having a squared portion 27 and a threaded portion 28, and the squared portion fits in the transverse opening 25 and is adapted to be adjusted along the said opening, and the tooth is secured to the lever by a thumb-nut 29, which is arranged on the threaded portion

of the stem and engages the enlarged end of the lever.

It will be seen that a simple, effective, and durable combined tire-bolt holder and wrench is provided, which is adapted to be adjusted to suit a wheel and which is readily adjustable to bring its tooth into engagement with the head of a bolt.

The shafts 6 and 8 are arranged at an angle to each other to enable a handle 30 to turn clear of the spokes of the wheel. The outer end of the shaft 6 is squared and threaded, and the handle is provided with a socket and is secured on the squared portion of the shaft by a nut.

The frame is recessed to receive the adjustable side plates, which are adapted to be moved forward on the frame to enable the device to clamp small fellies, and the frame is provided with curved shoulders 31, which are engaged by the concave inner ends 32 of the adjustable plates. The plates are rendered adjustable by the bolts 14, which pass through perforations 14[a] of the plates.

What I claim is—

1. The combination of the frame constructed of metal and comprising the sides having curved recesses, a cross-bar 3, connecting the sides at one end of the frame, and the Y-shaped portion 4, arranged at an angle to the frame and forming a bearing, the shaft 6, journaled in the Y-shaped portion, the shaft 8, journaled in the frame and connected with the shaft 6 and provided with a nut-socket, the bar 17, extending from the frame, and the lever 18, pivotally mounted on the bar and having its lower end arranged opposite the nut-socket and adapted to clamp the head of the bolt, substantially as described.

2. The combination of the frame, the shaft 8, journaled in the frame and provided with a nut-socket, the shaft 6, connected with the shaft 8 by a universal joint and arranged at an angle to the same, the bar 17, extending from the frame, the lever 18, pivotally mounted on the bar, and the tooth arranged at the inner end of the lever and adapted to engage the head of a bolt, substantially as described.

3. The combination of the frame provided with curved felly-recesses, the shaft 8, journaled in the frame and provided with a nut-socket arranged adjacent the recesses, the shaft 6, connected with the shaft 8 by a universal joint, the bar 17, the lever 18, adjustably and pivotally mounted on the bar, and a tooth adjustably mounted on the inner end of the lever, substantially as described.

4. The combination of the frame, the bar 17, extending from the frame and provided with a series of square perforations, the squared pivot arranged in one of the perforations, the lever having its inner end bent at an angle and provided with an opening to receive the bar 17 and having slots to receive the pivot and provided with notches to engage an edge of the same, and a tooth arranged on the inner edge of the lever, substantially as described.

5. The combination of the frame, the bar 17, extending therefrom, the lever pivotally mounted on the frame and provided at its inner end with a transverse opening, the tooth provided with a stem having a squared portion arranged in the transverse opening and a threaded portion, and a thumb-nut arranged on the threaded portion and adapted to secure the tooth in its adjustment, substantially as described.

6. The combination of the frame provided with curved felly-recesses and the adjustable side plates secured to the frame and provided with similar recesses and adapted to be moved forward on the frame to suit small fellies, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM LEHMAN.

Witnesses:
FRANK HORR,
WILLARD L. HOLMES.