

No. 672,061.

W. G. GOTSCHALL.
TIRE BOLT WRENCH.

Patented Apr. 16, 1901.

(Application filed July 24, 1900.)

(No Model.)

Fig. 1.

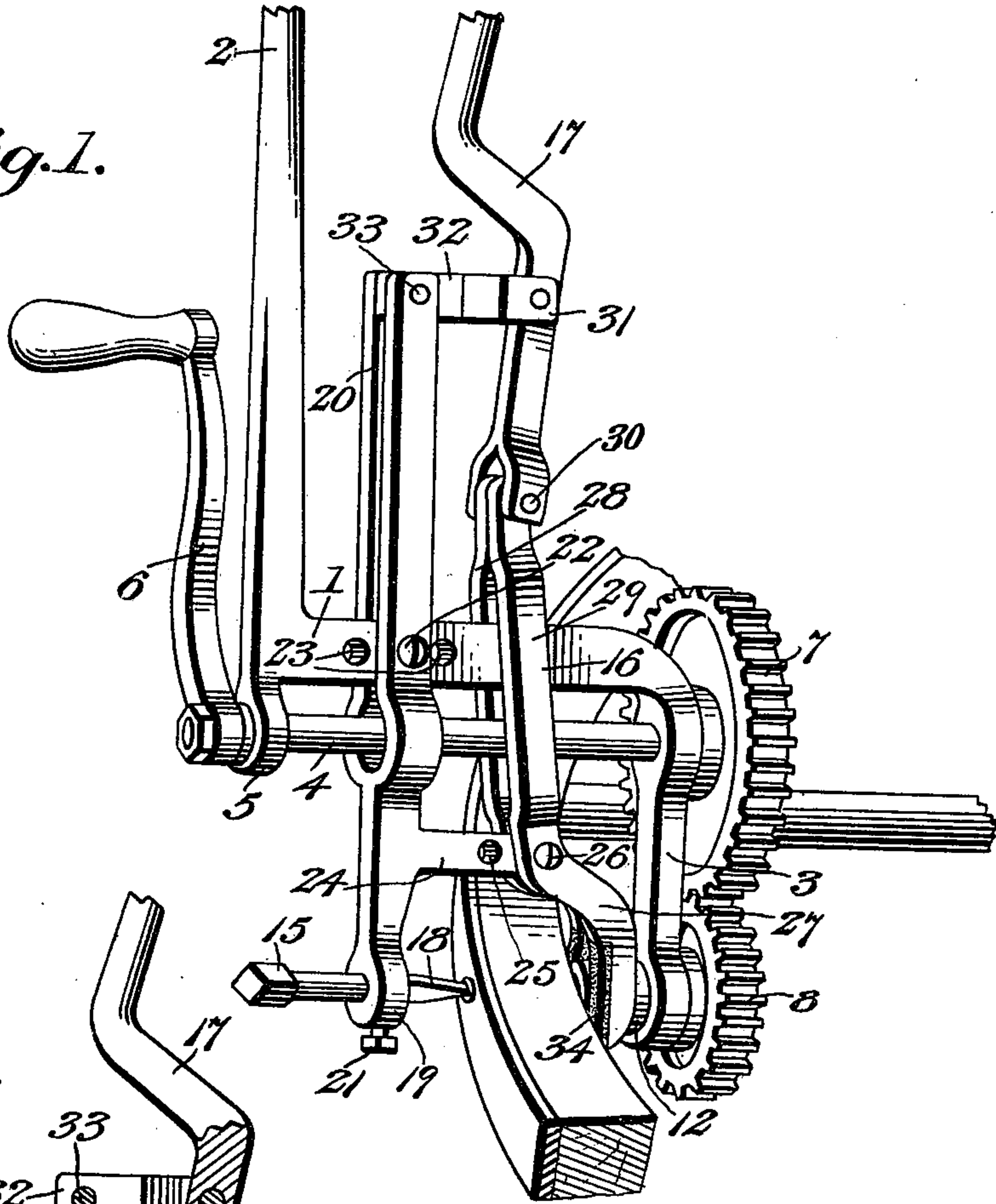


Fig. 2.

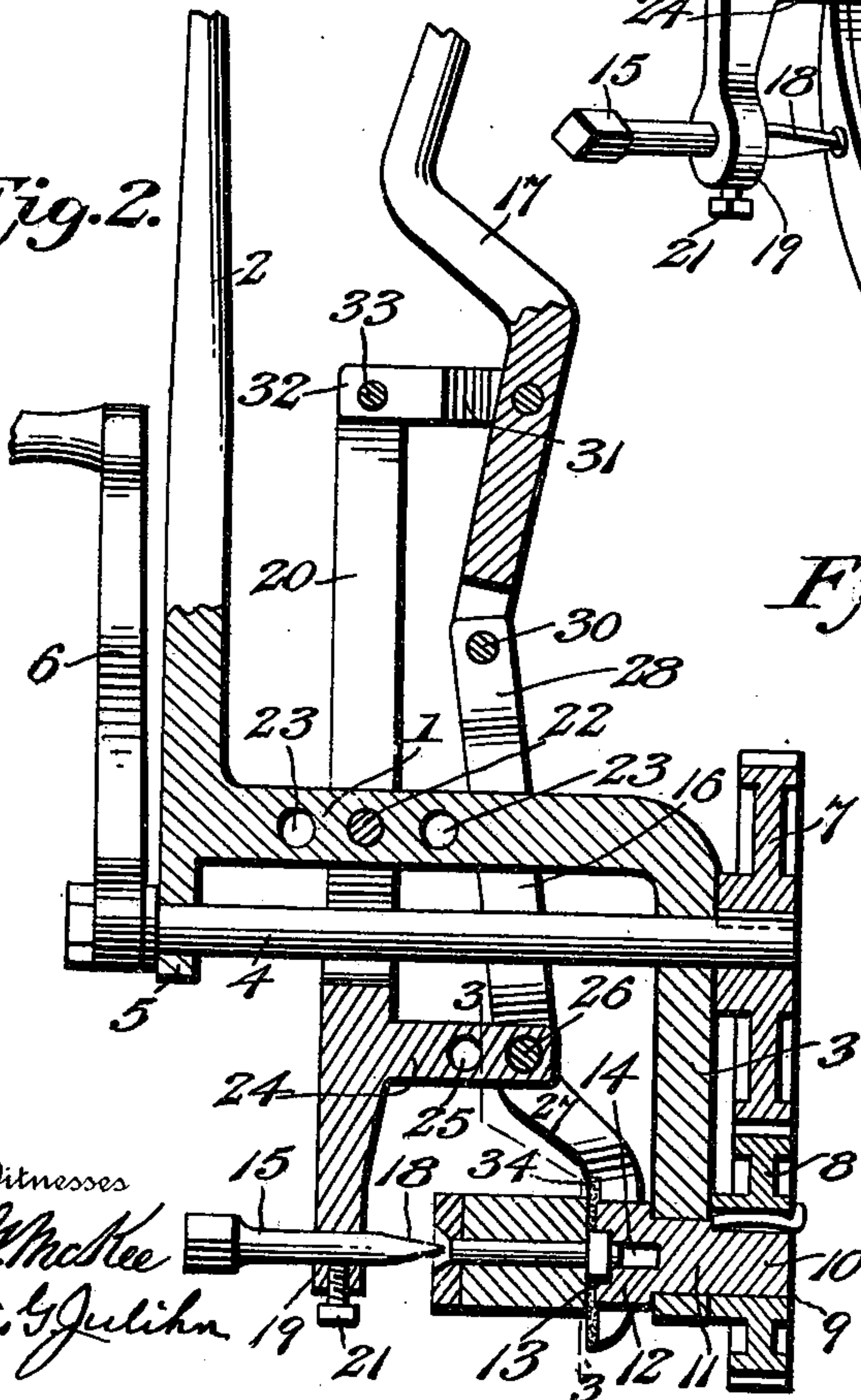
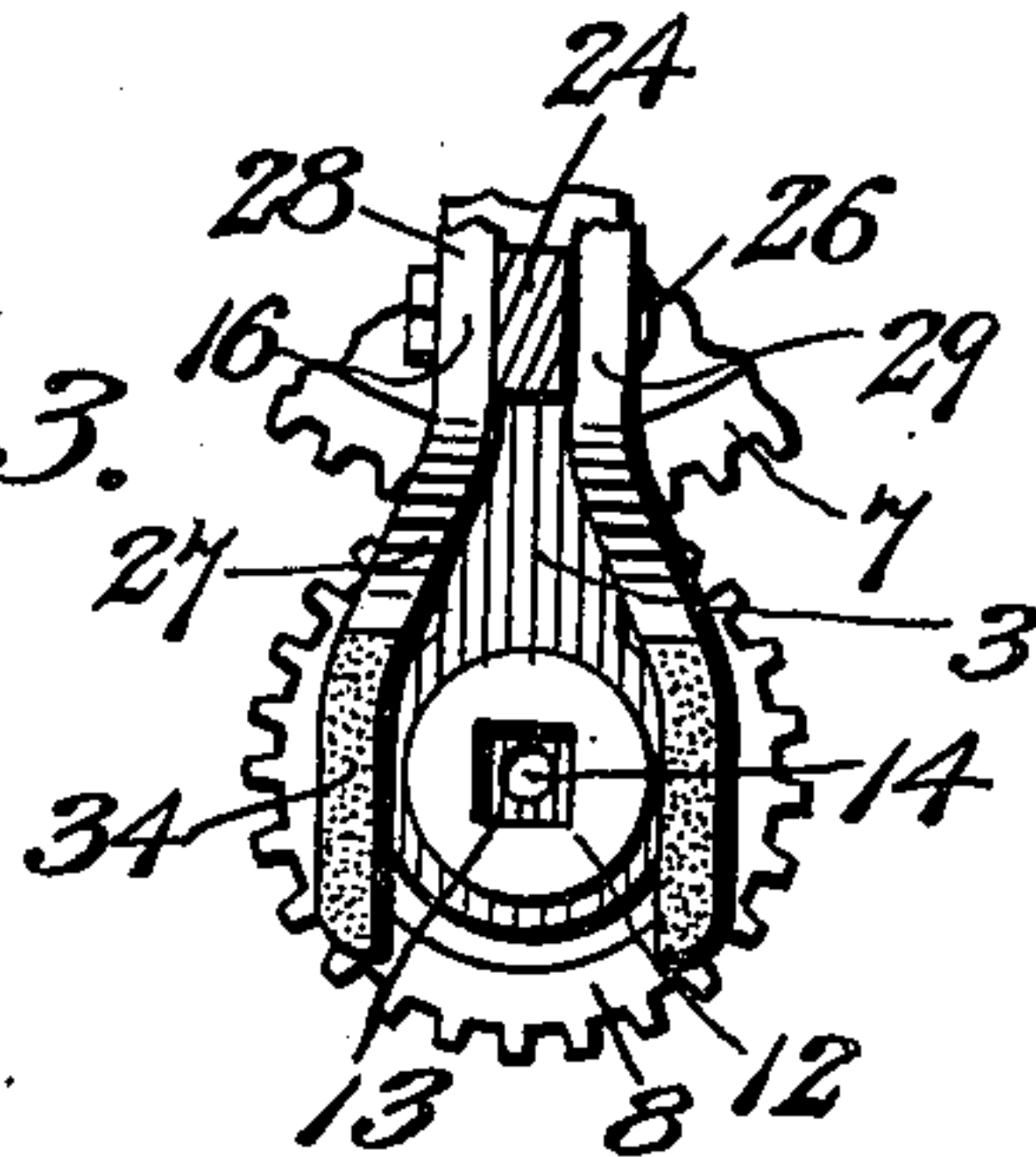


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM G. GOTSCHALL, OF DUNRIETH, INDIANA, ASSIGNOR OF ONE-HALF
TO EVERETT McFARLAND, OF SAME PLACE.

TIRE-BOLT WRENCH.

SPECIFICATION forming part of Letters Patent No. 672,061, dated April 16, 1901.

Application filed July 24, 1900. Serial No. 24,691. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. GOTSCHALL, a citizen of the United States, residing at Dunrieth, in the county of Henry and State of Indiana, have invented a new and useful Tire-Bolt Wrench, of which the following is a specification.

This invention relates to improvements in "tire-bolt wrenches," which term comprehends that type of tools which are employed for the purpose of replacing or displacing tire-bolts which connect the tire with the felly in wheel constructions.

The object of the invention is to provide a tool of this character equipped with an adjustable bolt-holder designed to retain the bolt against rotation, a rotary wrench operated by a crank to unscrew the nut or tap, and a clamping and guide member operated by a handle, which also operates the bolt-holder, and designed to cooperate with the bolt-holder to retain the device in place upon the wheel during the screwing or unscrewing of the nut and to guide the wrench to the nut when the device is being placed upon the wheel.

To the accomplishment of this object and others which will hereinafter more fully appear the invention consists in the construction and arrangement to be described, illustrated in the accompanying drawings, and defined in the appended claims.

In said drawings, Figure 1 is a perspective view of my device, illustrating its use. Fig. 2 is a central longitudinal section through the device complete, certain of the parts being shown in elevation. Fig. 3 is a detail view illustrating the arrangement of the clamping and guide member.

Referring to the numerals of reference employed to designate corresponding parts in the several views, 1 indicates the frame or stock of my wrench, from the ends of which extend in opposite directions a handle 2 and a bearing-arm 3, the handle 2 and arm 3 being disposed in substantially parallel planes. Disposed adjacent to the stock 1 is the main or driving shaft 4, having a bearing at one end in the arm 3 and at its opposite end in a bearing-bracket 5, projecting from the stock

1. Rotary movement is imparted to the shaft 4 by means of a crank 6, keyed upon the end of the shaft adjacent to the handle, and power is transmitted from said shaft by means of a comparatively large gear-wheel 7, keyed at the opposite end of the shaft beyond the arm 3 and meshing with the wrench-pinion 8, having a square opening 9 for the reception of the squared end 10 of the shank or stud 11 of the nut-wrench 12.

The stud of the nut-wrench 12 passes through and has a bearing in the arm 3, and the wrench proper is provided with a nut-socket 13, in the bottom wall of which is formed a depression or recess 14 for the reception of the end of the bolt which projects beyond the nut or tap. This aggroupment of elements comprehends the wrench proper, inasmuch as we now have a stock and handle carrying a rotary wrench and wrench actuating or driving mechanism by means of which the wrench may be rotated at a higher rate of speed than that imparted to the crank. It is necessary, however, to provide means for retaining the wrench in proper position upon the rim of the wheel and for holding the bolt against rotary movement while the nut is being screwed on or off, as the case may be. To accomplish these ends, I provide what may be termed an adjustable bolt-holder "15" and a "guiding and clamping member" 16, designed to be clamped against the inside of the felly and the outside of the tire for the purpose of retaining the device in place by means of a movable handle 17, common to both the bolt-holder and clamping member and designed to be gripped by the fingers of the operator and to be urged toward the handle 2 for the purpose of presenting the nut-holder and clamping member against the wheel-rim with the desired pressure.

The bolt-holder 15 is a short bar provided with a knife-edge 18, designed to engage the slot in the head of a tire-bolt. The adjustment of the holder 15 is effected by passing it through a socket 19 at one end of a holder-lever 20 and by providing said socket with an abutment-screw 21, which may be screwed up to retain the holder in its adjusted positions. The lever 20 is bifurcated for a con-

siderable portion of its length to permit it to straddle the shaft 4 and stock 1, to which latter it is adjustably fulcrumed at a point intermediate of its ends, as by a pintle 22, designed to be received within either opening of a series of openings 23 in the stock 1.

The bolt-holder 15 is, as a matter of course, arranged in alinement with the axis of the wrench 12, as it must engage the head of a bolt carrying a nut with which the wrench is designed to engage. At a point intermediate of the shaft 4 and the lower end of the holder-lever the latter is provided with a bracket-arm 24, extending at right angles to the lever in the direction of the bearing-bar 3 and provided with a series of openings 25 for the reception of the pintle or fulcrum-stud 26 of the guiding and clamping lever 16. The lower or clamping end 27 of the lever 16 is bifurcated to straddle the wrench 12 and is offset, although disposed in a plane substantially parallel with the end of the lever extending above the pintle 26. This bifurcation of the clamping member is effected by dividing the end of a solid lever, or, as shown, the lever 16 may be composed of a pair of metal strips 28 and 29, passing at opposite sides of the stock 1, shaft 4, and bracket 25 and connected by the pintle 26 and a knuckle-stud 30, pivotally connecting the upper end of the clamping-lever to the lower extremity of the handle 17, which is pivotally mounted at a point intermediate of its ends between the ears 31 of a bracket 32, extending at right angles to the lever 20 and securely retained within the bifurcated upper end of said lever by a rivet 33.

The operation of the device is as follows: Supposing a wheel to be supported in a horizontal position upon a wheel-rack, my device is presented to the rim of said wheel from above. The operator, grasping the handles 2 and 17, swings the latter and by reason of the arrangement shown urges the bifurcated end of the clamping member against the felly at opposite sides of the nut to be removed and simultaneously presents the knife-edge 18 of the bolt-holder to the slotted head of the bolt for the purpose of retaining the bolt against movement and for the further purpose of clamping the rim of the wheel securely in order that the wrench 12 may be presented with facility to the nut. Continued pressure upon the handles 2 and 17 will cause the socket 13 of the wrench to be advanced toward the rim for the reception of the nut upon the tire-bolt, in which position of the parts the crank 6 is operated to rotate the wrench for the purpose of unscrewing the nut. In like manner when it is desired to screw a nut upon the bolt instead of therefrom the nut is first placed in the wrench-socket and the operation just described is then repeated to present the nut to the bolt, and the crank is operated in the opposite direction to screw the nut firmly against the felly of the wheel. The faces of the bifurcated end 27 of the

clamping member which contact with the felly are shielded by non-abrasive pads 34 to prevent abrasion of the surface with which they contact.

From the foregoing it will be observed that I have produced a simple and ingenious tire-bolt wrench by means of which the nuts may be quickly screwed upon or removed from tire-bolts serving to retain the tire upon the felly in wheel structures and that the coöperative elements of the wrench may be quickly and conveniently adjusted to accommodate wheel rims and nuts of varying sizes; but, while the present invention appears at this time to be preferable, I do not desire to be understood as limiting myself to the structural details defined, but reserve the right to effect such changes, modifications, and variations as may fall properly within the scope of the protection prayed.

What I claim is—

1. In a device of the character described, the combination with a stock, provided with a handle and a wrench and wrench-actuating mechanism carried by the stock, of clamping members movable independent of the stock, but having operative connection therewith and means for urging said members against the opposite sides of a wheel-rim to facilitate the application of the wrench.

2. In a device of the character described, the combination with a stock, provided with a handle and a wrench and wrench-actuating mechanism carried by the stock, of a bolt-holder and clamping member both movable independent of the wrench and stock but operatively connected to the latter, and means common to the bolt-holder and clamping member for urging them against the opposite sides of a wheel-rim to facilitate the application of the wrench.

3. In a device of the character described, the combination with a stock, rotary wrench and wrench-actuating mechanism, of a holder-lever, a clamping-lever, a bolt-holder carried by the holder-lever, and means for actuating said levers simultaneously to cause them to clamp the rim of a wheel to facilitate the application of the wrench.

4. In a device of the character described, the combination with a stock, a rotary wrench carried thereby, and wrench-actuating mechanism, of a holder-lever pivoted upon the stock and provided with a bolt-holder, a clamping-lever having one end opposed to the holding-lever, and a handle connected to both of said levers to actuate them simultaneously in opposite directions.

5. In a device of the character described, the combination with a stock, a rotary wrench and wrench-actuating mechanism, of a holder-lever pivotally mounted upon the stock, a bolt-holder carried by said lever, a clamping-lever pivotally supported by the holder-lever, and a pivoted handle supported by the holder-lever and having a pivotal connection with the clamping-lever, whereby the movement

of said handle will effect the movement of the said levers in opposite directions to clamp the device upon a wheel-rim.

6. In a device of the character described, the combination with a stock, a handle extending from the stock, a rotary wrench and wrench-actuating mechanism, of a holder-lever pivoted upon the stock, an adjustable holder carried by said lever, bearing-brackets extending from the holder-lever at opposite sides of its pivot, a clamping-lever pivotally mounted upon one of said brackets, a second handle pivotally mounted upon the other bracket and having a pivotal connection with the clamping-lever, said handles being arranged in proximity to permit them to be gripped by the hand of the operator.

7. In a device of the character described, the combination with a stock provided with a handle and with a bearing-arm extending in opposite directions from its ends, a bearing-bracket carried by the stock, a shaft journaled in said bracket and in the bearing-arm,

a crank mounted on said shaft adjacent to the handle of the stock, a rotary wrench having a bearing in the outer end of the bearing-arm, gearing intermediate of the shaft and wrench, a holder-lever pivotally mounted upon the stock and provided with an adjustable bolt-holder in axial alinement with the wrench, bearing-brackets extending from the holder-lever at opposite sides of the stock, a clamping-lever pivoted to one of said brackets and provided with a bifurcated end in proximity to the wrench, and a pivoted handle carried by the other bearing-bracket upon the holder-lever and having a pivotal connection with the adjacent end of the clamping-lever.

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

WILLIAM G. GOTSCHALL.

Witnesses:

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WM. L. LEFTER.