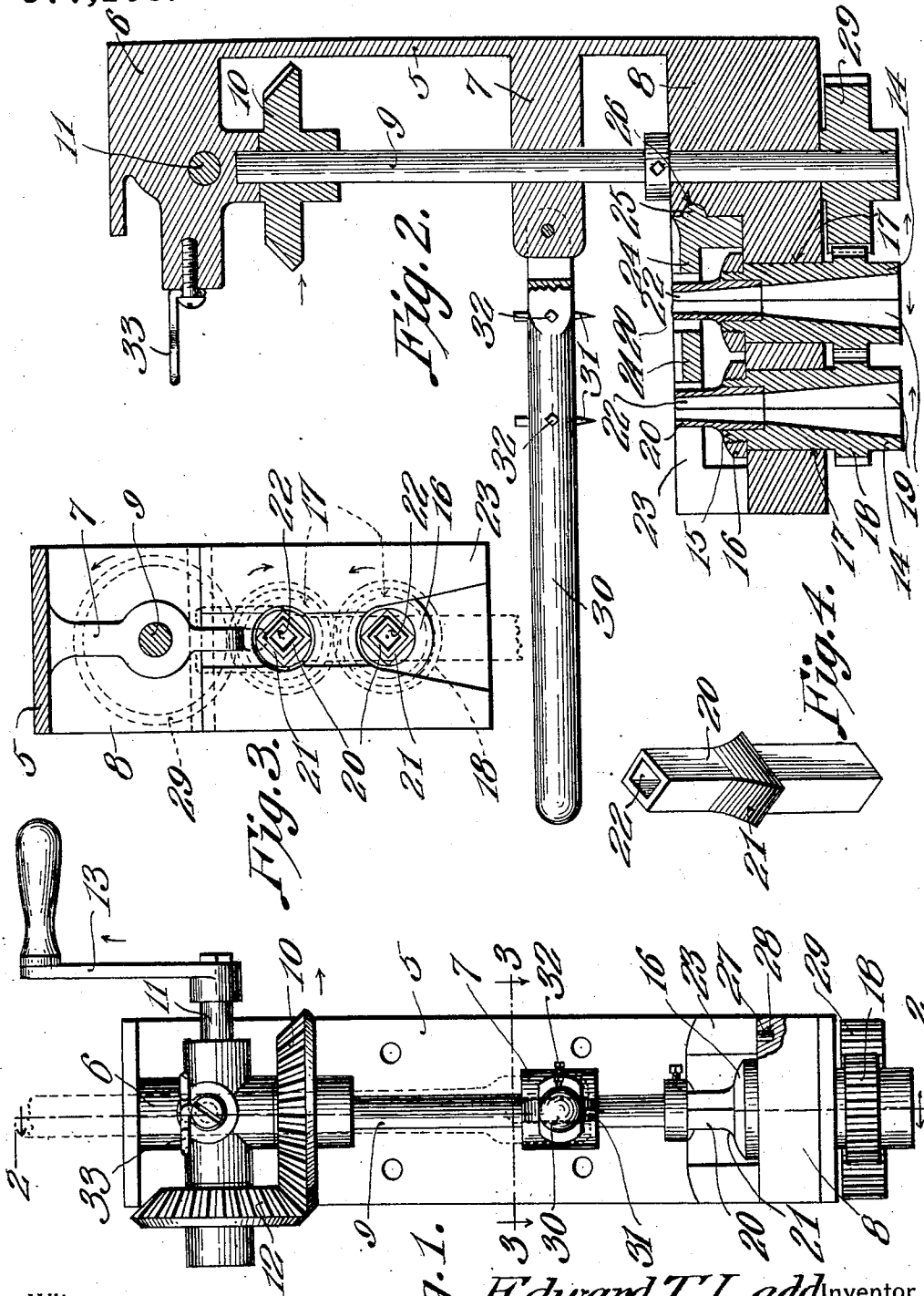


E. T. LADD.
MACHINE WRENCH.
APPLICATION FILED JULY 29, 1910.

977,103.

Patented Nov. 29, 1910.



Witnesses

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Fig. 1.

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EDWARD T. LADD, OF DENVER, COLORADO.

MACHINE-WRENCH.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWARD T. LADD, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented a new and useful Machine-Wrench, of which the following is a specification.

It is the object of the present invention to provide an improved construction of machine wrench and the invention aims primarily to provide a machine wrench so constructed that by rotating the operating crank handle thereof in but one direction, the nuts may be tightened or loosened as may be desired. Ordinarily, in machine wrenches, it is necessary, in loosening a nut, to rotate the operating crank handle in a direction opposite to that in which it is to be rotated in tightening a nut and the wrench of the present invention therefore presents a decided advantage over wrenches in which the crank handle must be rotated in two directions.

The invention aims further to attain the above mentioned ends without employing any clutch mechanism or gear shifting mechanism.

The invention aims further to provide an improved means for holding the bolts against rotation while the nuts are being removed therefrom.

With the above and other objects in view, the invention consists in the general construction and arrangement of parts shown in the accompanying drawings in which,—

Figure 1 is a front elevation of the device. Fig. 2 is a vertical sectional view on the line 2—2 of Fig. 1. Fig. 3 is a horizontal sectional view on the line 3—3 of Fig. 1. Fig. 4 is a perspective view in detail of one of the chucks of the wrench.

In the drawings, the device is illustrated as embodying a frame which is indicated by the numeral 5 and is to be secured upon an upright or other suitable support such, for example, as a post. Integral with this frame 5 is an upper bearing which is indicated by the numeral 6, an intermediate bearing indicated by the numeral 7, and a lower bearing indicated by the numeral 8, these bearings being of any suitable or desired combination.

A shaft indicated by the numeral 9 is journaled at its upper end in the bearing 6 and at its lower end in the bearing 8 and extends through the intermediate bearing 7

as clearly illustrated in Fig. 2 of the drawings.

A beveled gear indicated by the numeral 10 is secured upon the shaft 9 at the upper end thereof directly below the upper bearing 6 and journaled also in this bearing, in a horizontal plane, is a shaft 11 carrying a beveled gear 12 which is in mesh with the gear 10. The gear 12 is fixed upon one end of the shaft 11 and a crank handle 13 is fixed upon the other end of the shaft, preferably at the right hand side of the frame 5. It will be readily understood that by rotating the crank handle 13, rotative movement will be imparted to the shaft 11 and through the medium of the gears 10 and 12, to the shaft 9. The chucks of the machine will now be specifically described and the manner of mounting the same and afterward the gear connections for driving the chucks will be referred to.

Each of the chucks mentioned above includes a cylindrical body indicated by the numeral 14 and this body at its upper end is formed with a reduced threaded portion 15 upon which is screwed a collar 16. The bearing 8 or in other words that portion of the machine constituting this bearing extends forwardly to a suitable degree as clearly shown in Figs. 2 and 3 of the drawings and is formed with openings indicated by the numeral 17 of which there are two, there being provided also two of the chucks the bodies of which are rotatably fitted in the said openings 17. The chucks 14 are preferably mounted one in advance of the other and each chuck body 14 is formed with a gear portion 18, the said portions of the bodies of the chucks being in mesh whereby rotative movement imparted to one chuck will result in rotation of the other chuck in an opposite direction. The chuck body 14 is formed with an axial opening indicated by the numeral 19 and this opening, throughout its lower portion, may be of any contour but at its upper end is polygonal and preferably rectangular, and fitted in the upper end of the opening in the chuck body 14 is a nut socket 20, this socket having a shoulder 21 resting upon the upper end of the body 14 and having a nut-receiving bore 22 of a contour corresponding to the contour of the nut to be removed, it being understood however that a number of these nut sockets are provided with each machine so that nuts of various sizes and various shapes

may be removed by substituting one socket for another, prior to operation of the machine. Inasmuch as the nut sockets 20 are polygonal in cross section as are also the upper ends of the openings 19 in the chuck body 14, any means for positively securing the sockets in the upper ends of the openings in the respective chuck bodies is unnecessary.

As will be readily understood, the machine embodying the present invention is intended primarily to be used in tightening and loosening nuts on carriage wheels and as a suitable rest or support for the felly of the wheel the nuts of which are being tightened or loosened by the machine, there is provided a member having spaced sides 23 and connecting portions 24, this member being disposed upon the upper side of the forwardly extended portion of the bearing 8 with one of its connecting portions extending between the upstanding nut sockets 20 of the two chucks and its rear connecting portion extending across between the sides 23 at their rear ends and rearwardly of the rearmost nut socket 20.

As illustrated in the drawings, the upper side of the bearing 8 is cut away or shouldered to afford a seat for this wheel-supporting member, and this rear connecting portion 24 of the wheel-supporting member is formed with a transversely extending rib indicated by the numeral 25 which rib fits in a groove 26 formed in the bearing 8. At the front, and upon their under sides, the side portions 23 of the wheel-supporting member are provided with downwardly projecting studs indicated by the numeral 27 and these studs fit in sockets 28 formed in the upper face of the cut away portion of the bearing 8. It will now be readily understood that whereas when the wheel-supporting member is in position upon the bearing 8 as illustrated in the several figures of the drawings, it will be held against lateral or forward displacement, it may at the same time be readily removed when it is desired to substitute one nut socket for another or to remove the chucks. It will be observed that the openings 19 in the chuck bodies 14 increase in size in a downward direction so that a nut unscrewed from a bolt by either socket 20, will fall through the bore of this socket and through the opening 19.

A gear indicated by the numeral 29 is secured upon the shaft 9 at the lower end thereof and meshes with the gear portion of the rearmost chuck 14, and it will now be readily understood that by rotating the crank handle 13 and thereby imparting ro-

tative movement to the shaft 9, the rear chuck will be rotated in a direction to loosen a nut received in its respective nut socket 20. Such rotative movement afforded to the rear chuck 14 will result in the rotation in an opposite direction to the forward chuck, or in other words in rotation of this last mentioned chuck in a direction to tighten a nut received in its socket 20. Consequently, by rotating the crank handle 13 in a forward direction, or in other words in a direction from the operator, and disposing a vehicle wheel upon the wheel-support with a nut upon the wheel received in the socket of the rear chuck, the said nut will be turned off from its bolt, while on the other hand by so disposing the wheel that the nut will be received in the socket of the forward chuck, the nut will be tightened upon its bolt.

As a means for holding the bolt against rotation while the nut is being tightened or loosened, there is provided a hand lever indicated by the numeral 30, this lever being pivoted to the intermediate bearing 7 and being provided with bolt head engaging spurs 31 held at adjustment by set screws 32. These spurs 31 are so located upon the hand lever 30 that by pressing down upon the lever, one or the other of these spurs will be caused to bite into the head of the bolt. In order that this hand lever may be held normally in inoperative position and consequently out of the way of a wheel felly to be disposed upon the wheel supporting member of the device, there is provided a spring wire member indicated by the numeral 33 and secured upon the upper bearing 6, this member being so constructed as to frictionally receive the handle end of the lever 30 when the said lever is swung up upon its pivot.

What is claimed is:—

In a wrench of the class described, a body member including a supporting portion, a rotatable chuck mounted in the supporting portion, means for rotating the chuck, and a work support removably mounted upon the supporting portion of the body and including spaced side members between which the upper end of the nut socket projects, the said upper end of the chuck being in substantially the same plane as the upper faces of the said sides of the work support.

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

EDWARD T. LADD.

Witnesses:

F. W. BIRNEY,
I. H. NORTHRUP.