Nov. 6, 1951 C. A. PECHACEK 2,574,156

DUAL WHEEL LUG WRENCH

Filed Jan. 14, 1949

FIG. 1

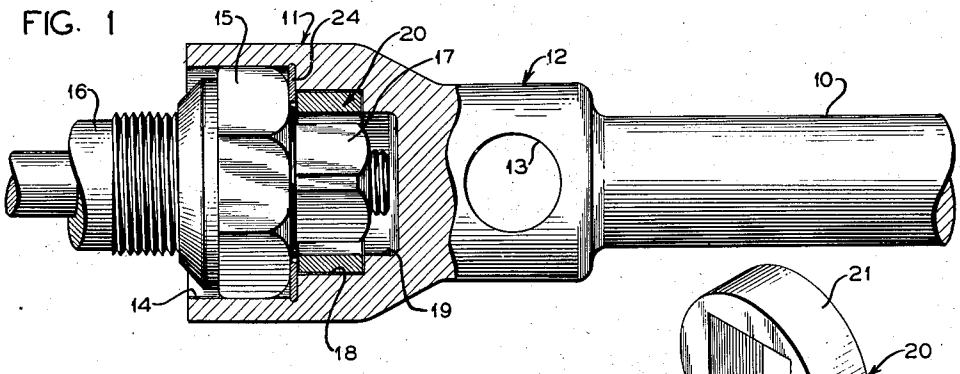


FIG. 2

FIG. 3

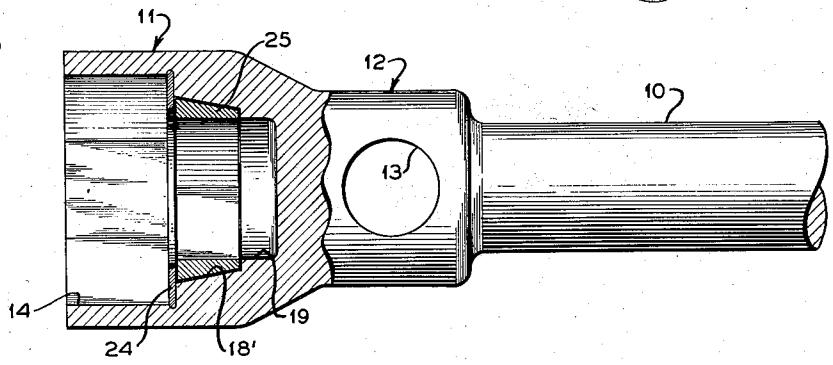
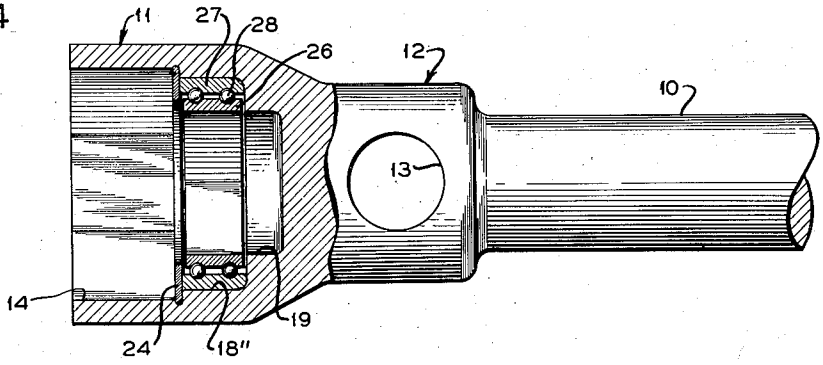


FIG. 4



INVENTOR.
C. A. PECHACEK

BY

A. Yates Dowell
ATTORNEY

Patented Nov. 6, 1951 2,574,156

UNITED STATES PATENT OFFICE

2,574,156

DUAL WHEEL LUG WRENCH

Charles A. Pechacek, Tucumcari, N. Mex.

Application January 14, 1949, Serial No. 70,869

4 Claims. (Cl. 81—121)

1

This invention relates to tools, and more particularly to a wrench adapted for use in removing or replacing the outer lug of a duel wheel such as commonly employed with trucks and the like.

In the usual construction of a dual wheel, the lug of the inner wheel, which is of smaller size than that of the outer wheel, extends axially beyond the outer wheel lug, so that it is difficult to steady or maintain the alignment of a wrench applied to the outer wheel lug for rotating the same. As it is necessary to use relatively great force in loosening and tightening a wheel lug, and as the surface contact between the lug and the wrench is not great, some means for assisting the maintenance of the axial alignment of the wrench and lug is desired. It is necessary that the aligning or supporting means used with this type of lug be of such construction that it does not bind through contact with the inner wheel lug nor apply rotative force thereto.

Wrenches for dual wheels have been employed heretofore, some having been provided with an auxiliary socket for the inner wheel lug which is attached to an arm extending beyond the wrench. This is a rather complex structure, however, and the additional handle is likely to interfere with the use of the wrench.

Accordingly, it is an object of the present invention to provide a wrench adapted to be applied to the outer lug of a dual wheel assembly in order that substantial force may be applied to rotate the lug and in which specific means is provided for facilitating the maintenance of the alignment of the wrench with the lug.

A further object of the invention is the provision of a lug wrench for a dual wheel having an auxiliary socket for the inner lug which is freely rotatable relative to the socket for the outer lug.

A still further object of the invention is the provision of a simple, sturdy, lug wrench for a dual wheel in which aligning and steadying means are provided for the wrench which do not interfere with the inner lug.

These and other objects of the invention will become apparent from the following description taken together with the accompanying drawings, in which:

Fig. 1 is a plan view of the head of a wrench constructed in accordance with the present invention, with a portion in section showing its use with a convenional dual wheel asembly;

Fig. 2, a perspective of the bushing; and,

Figs. 3 and 4, views similar to Fig. 1, of modified forms of the invention.

Referring to the drawings, a wrench is illus-

2

trated having a shank 10 and a head portion 11 joined to the shank by an enlarged portion 12 provided with an aperture 13 for receiving a turn bar or the like. The head 11 is provided with a relatively large opening or socket 14 at its outer end which is preferably of a hexagonal configuration to receive a conventional lug 15. The lug is attached to a conventional fastening element or bolt 16 extending from an outer wheel of a dual wheel mounting assembly. A smaller lug 17 of conventional type is attached to a bolt which extends axially through the bolt 16 and is attached to the inner wheel of the assembly.

An opening or socket 18 of smaller size than the socket 14 and axially aligned therewith is provided in the head, and a third opening or socket 19 extends axially beyond the opening 18, the openings 14, 18 and 19 presenting a stepped arrangement of sockets of decreasing diameter. The surfaces defining the openings 18 and 19 are preferably cylindrical.

Positioned within the opening 18 is a bushing 20 having an outer cylindrical surface 21 which is of slightly smaller size than the opening 18 in order that it may revolve in the opening. The bushing has an axial aperture 23 adapted to engage the wrench engaging surfaces of the lug 17, as for example, the square cross section illustrated in Fig. 2.

In order to retain the bushing 20 in the opening 18, a retaining ring 24 is provided which is pressed into the opening 14 and has an inner diameter less than the outer diameter of the bushing but which is larger than the aperture 23.

In the operation of the device, the lug wrench is applied to the lug 15 and the lug 17 is received within the aperture 23 of the bushing 20. When a turning force is applied to the wrench, as by means of a bar through the opening 13, the alignment of the wrench and the studs is assisted by engagement of the bushing 20 with the lug 17. As the bushing is free to turn within the wrench, turning of the wrench in order to rotate the lug 15 is possible without rotating the lug 17. It is therefore apparent that additional support for the wrench is provided by means of the rotatable bushing 20. The countersunk recess or cavity 19 permits the end of the lug 17 and its bolt to project beyond the bushing 20 without contacting the body of the wrench.

In the embodiment illustrated in Fig. 3, the opening 18' for receiving the bushing 25 is tapered, or of frusto-conical configuration to receive the bushing which has sides of similar

shape. By using this modification the bushing is relatively easier to position in the opening but operates in the same manner as the form shown in Fig. 1.

In Fig. 4, a still further modification is shown, in which the bushing 26 is adapted to rotate within a cage 27 and anti-friction means such as ball bearings 28 are provided for reducing the frictional resistance to rotation of the bushing. Although the bearings shown are of the ball bearing type, obviously other types are contemplated, such as the pin, roller, or needle types. The cage 27 is positioned in the socket 18'' by suitable means such as a press fit or the like, in order that it will not rotate relative to the socket.

It is apparent that the invention contemplates the provision of a wrench particularly adapted for removing the outer wheel lug of a dual wheel mounting assembly and includes a rotatable bushing in the head of the wrench adapted to rotatably receive the inner wheel lug in order that the axial alignment of the wrench and lugs may be maintained.

It will be obvious to those skilled in the art that various changes may be made in the invention without departing from the spirit and scope thereof and therefore the invention is not limited to that which is shown in the drawings and described in the specification but only as indicated in the appended claims.

What is claimed is:

1. A dual wheel lug wrench for application to the lugs of a dual wheel assembly comprising a shank, a head attached to the shank, and an intermediate apertured portion between the head and the shank for receiving a turning bar, a first socket at the extremity of the head for receiving an outer wheel lug, a second socket further in the head and axially aligned with the first socket and of smaller diameter, a bushing entirely contained and rotatably mounted in said second socket and having an aperture of a size and configuration to snugly receive the inner wheel lug, means for retaining said bushing in said second socket, and a third socket of smaller diameter than said second socket to receive the extremity of the inner wheel lug and bolt extending through said bushing, whereby the wrench may be applied to the outer wheel lug and the inner wheel lug received in the bushing in order that axial alignment of the wrench and lugs may be maintained during application of a turning force solely to the outer wheel lug.

2. A dual wheel lug wrench comprising a head for engagement with the lugs, the head having a first relatively large socket for engaging the outer wheel lug, a second relatively smaller socket axially aligned with the first socket, a bushing entirely contained and rotatably received within said second socket and having an aperture of a size and configuration to snugly receive the inner wheel lug, and a third socket smaller than the second socket and axially aligned therewith to receive a portion of the inner wheel lug and bolt extending through said bushing, whereby the bushing assists in maintaining the alignment of the wrench with the lugs during rotation of the outer wheel lug and with the inner wheel lug remaining stationary.

3. The structure recited in claim 2, the second socket being frusto-conical, and the outer surface of the bushing being of similar configuration.

4. The structure recited in claim 2, the bushing being mounted in a cage, and anti-friction means being provided between the bushing and the cage, the cage being fixed relative to the socket, whereby the frictional resistance to turning of the bushing is minimized.

CHARLES A. PECHACEK.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
956,467	Anderson	Apr. 26, 1910
1,424,235	Bronander	Aug. 1, 1922
1,507,362	Bartosik	Sept. 2, 1924
2,181,678	Wright	Nov. 28, 1939
2,417,598	Jones	Mar. 18, 1947
2,497,789	Mueller	Feb. 14, 1950

FOREIGN PATENTS

Number	Country	Date
22,746	Great Britain	Oct. 4, 1897