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HUB-MOUNTED WHEEL WRENCH

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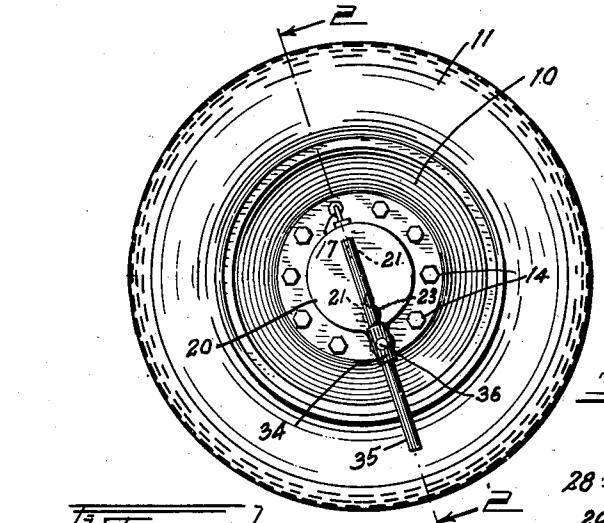


Fig. 1.

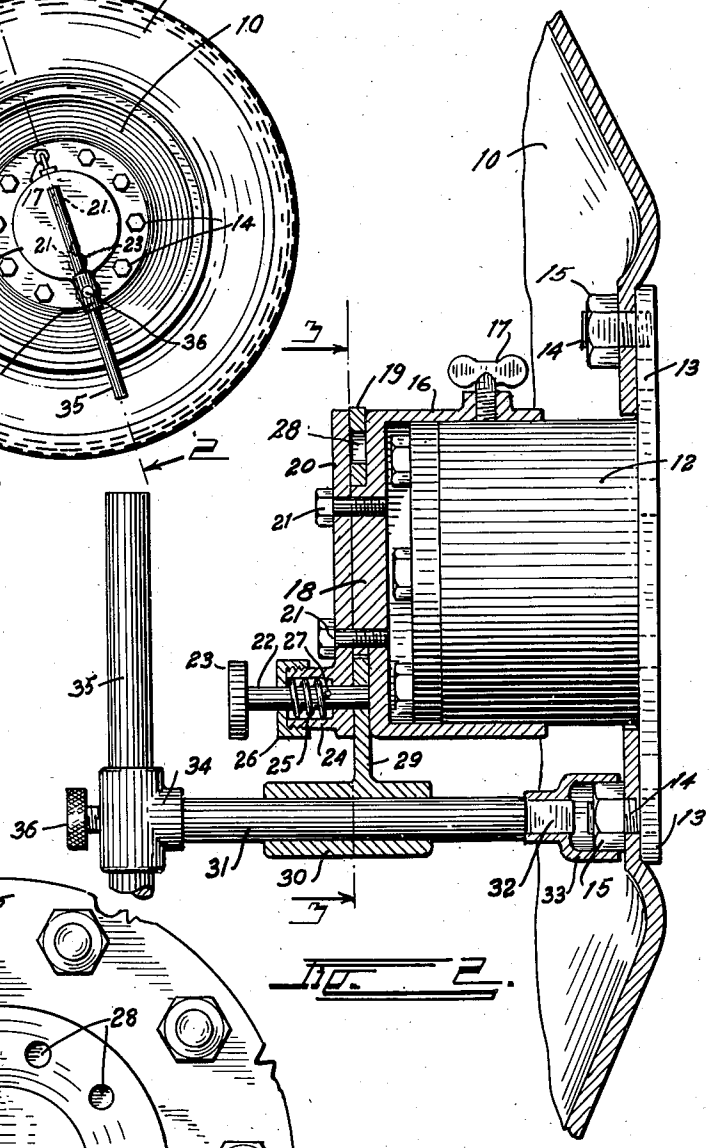


Fig. 2.

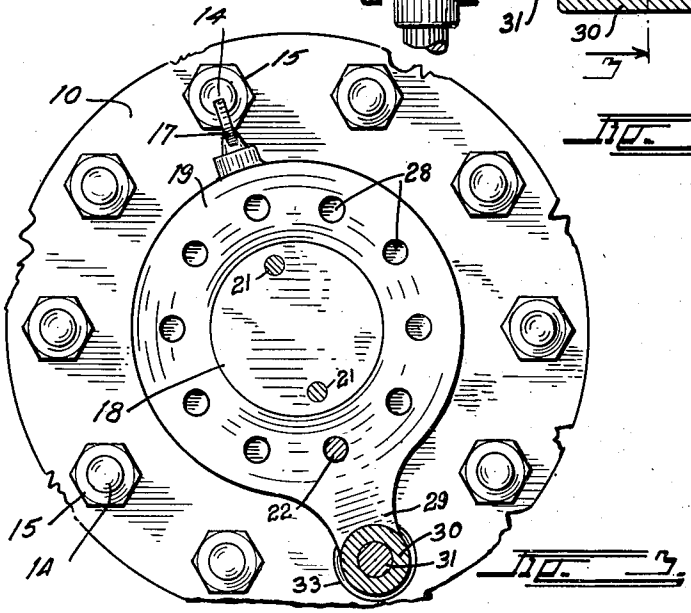


Fig. 3.

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HUB-MOUNTED WHEEL WRENCH

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4 Claims. (Cl. 81—121)

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This invention relates to a wheel nut wrench for automotive vehicles, and has for its principal object the provision of a wrench which will be self-supporting, and automatically aligning.

It is exceedingly difficult to remove the wheel nuts from large, truck-type wheels, especially when they have become set or fixed from long disuse. It is usually necessary to support the wheel wrench with one hand which allows but a single hand to be used for applying force for rotating the nut.

Another object of this invention is to provide means which can be quickly and easily placed on the hub of a wheel, and which will automatically align the wheel wrench with each nut to be removed, and also support the wrench in alignment with the said nut, so that the operator can use both hands for loosening and rotating the nut.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention, reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a face view of a typical automotive wheel of the truck type, illustrating the improved wrench in place thereon;

Fig. 2 illustrates a vertical section across the hub of the wheel, taken on the line 2—2, Fig. 1, illustrating the construction of the improved wrench; and

Fig. 3 is a vertical cross-section, taken on the line 3—3, Fig. 2.

In the drawing, a conventional wheel is illustrated at 10, with its tire at 11 and its hub at 12. The wheel 10 is usually secured to a wheel flange 13 by means of threaded studs 14 and wheel clamping nuts 15. This invention is designed for the removal and replacement of the nuts 15. The improved wrench employs a hub cup 16 of a size to slip over the hub 12 and be secured in place thereon by means of a suitable set screw 17. The outer face of the cup 16 is provided with a circular bearing boss 18, upon which an annular ring plate 19 is rotatably mounted. The ring plate 19 is held in place on the boss 18 by means of a circular cap plate 20 secured thereon by means of suitable cap screws 21.

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The cap plate 20 carries a plunger 22 terminating at its outer end in a finger button 23. The plunger passes through a spring sleeve 24 in which a compression spring 25 is compressed by means of a spring cap 26. The spring acts against a pin 27 on the plunger 22 to constantly urge the inner extremity of the latter toward the plate 19.

The plate 19 is provided with a plurality of plunger-receiving holes 28 corresponding in number and in angular placement to the wheel studs 14.

A bracket arm 29 extends radially outward from the plate 19 and supports a wrench bearing sleeve 30. A wrench shaft 31 extends through the bearing sleeve 30, it being both slidable and rotatable in the latter. One extremity of the shaft 31 is square, as shown at 32, to receive a conventional socket wrench 33. The other extremity carries a T fitting 34, through which a handle bar 35 extends. The handle bar may be set in any projecting position by means of a set screw 36.

The wrench bearing sleeve 30 is positioned to align the axis of the shaft 31 with the bolt circle of the studs 14 and parallel to the axis of the wheel hub 12.

In use, the cup 16 is slipped over the extremity of the hub 12, and the socket wrench 33 is slipped over one of the nuts 15. The set screw 17 is then tightened to lock the cup 16 on the hub 12.

The handle is now rotated to loosen the nut 15, after which the plunger 22 is pulled outwardly to release it from one of the holes 28, and the plate is rotated until the plunger 22 engages the next hole 28. This aligns the socket wrench with the next nut, which is removed by rotating the handle member 35. This is successively continued throughout the entire series of nuts 15.

It will be noted that the operator does not need to support the wrench, nor does he need to align it with the nuts. This is done automatically by the plunger 22 engaging the holes 28. In fact, after the wrench has been placed upon the first nut, all of the remaining nuts can be removed or replaced even in the dark.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. A wheel wrench for removing wheel nuts

from a wheel having an annular series of wheel nuts surrounding a central, projecting hub, comprising: a hub cup arranged to slip over the projecting extremity of said hub; a wrench-carrying member mounted on said hub cup, said wrench-carrying member being rotatable about said hub cup; a wrench bearing sleeve carried by said carrying member; a wrench shaft slidably and rotatably passing through said bearing sleeve parallel to the axis of said wheel and in alignment with said nuts; a socket wrench on the inner extremity of said wrench shaft to receive said nuts; and a handle member on the outer extremity of said shaft to rotate the latter.

2. A wheel wrench for removing wheel nuts from a wheel having an annular series of wheel nuts surrounding a central, projecting hub, comprising: a hub cup arranged to slip over the projecting extremity of said hub; a wrench-carrying member mounted on said hub cup; said wrench-carrying member being rotatable about said hub cup; a wrench bearing sleeve carried by said carrying member; a wrench shaft slidably and rotatably passing through said bearing sleeve parallel to the axis of said wheel and in alignment with said nuts; a socket wrench on the inner extremity of said wrench shaft to receive said nuts; and a handle member on the outer extremity of said shaft to rotate the latter; and means for preventing rotation of said carrying member when said socket wrench has aligned with one of said nuts.

3. A wheel wrench for removing wheel nuts from a wheel having an annular series of wheel nuts surrounding a central, projecting hub, comprising: a hub cup arranged to slip over the projecting extremity of said hub; a concentric bearing boss projecting from said cup; an annular, rotatable plate mounted on said boss; a cap member holding said plate on said boss; a wrench bearing sleeve carried by said plate; a wrench shaft slidably and rotatably mounted in said bearing sleeve parallel to the axis of said hub and in alignment with said nuts; a socket wrench on the inner extremity of said wrench shaft; and handle means on the outer extremity thereof.

4. A wheel wrench for removing wheel nuts from a wheel having an annular series of wheel nuts surrounding a central, projecting hub, comprising: a hub cup arranged to slip over the projecting extremity of said hub; a concentric bearing boss projecting from said cup; an annular, rotatable plate mounted on said boss; a cap member holding said plate on said boss; a wrench bearing sleeve carried by said plate; a wrench shaft slidably and rotatably mounted in said bearing sleeve parallel to the axis of said hub and in alignment with said nuts; a socket wrench on the inner extremity of said wrench shaft; and handle means on the outer extremity thereof; and locking means for locking said plate against rotation when said socket wrench is in alignment with any of said nuts.

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