April 18, 1950 C. D. NELLIS 2,504,345

WHEEL CHANGING TOOL

Filed March 25, 1946

Fig. 1

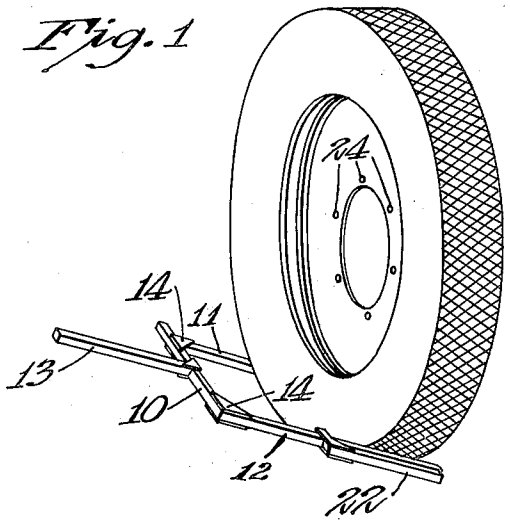


Fig. 3

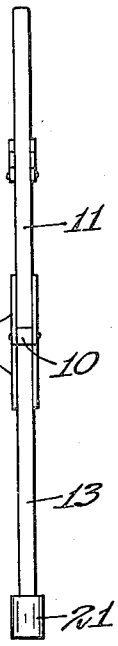


Fig. 6

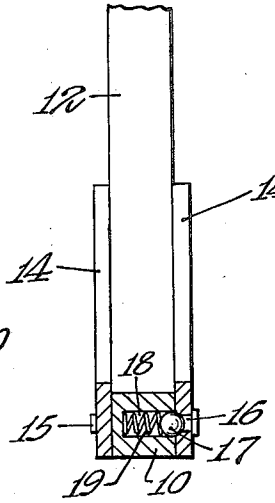


Fig. 2

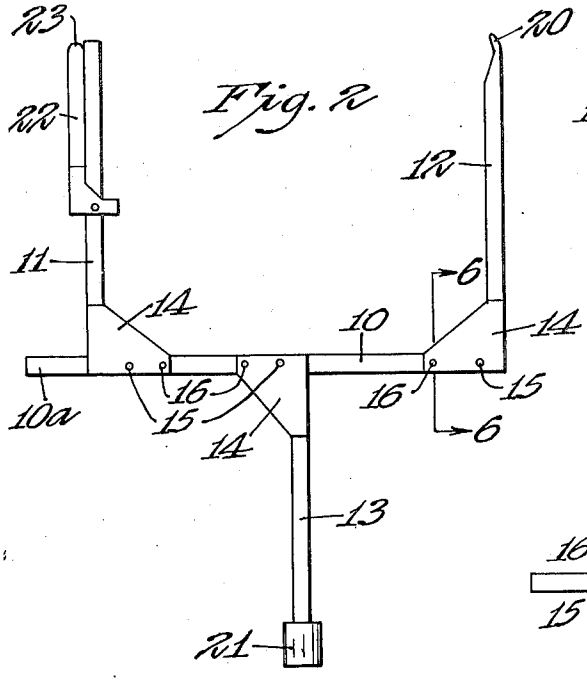


Fig. 4

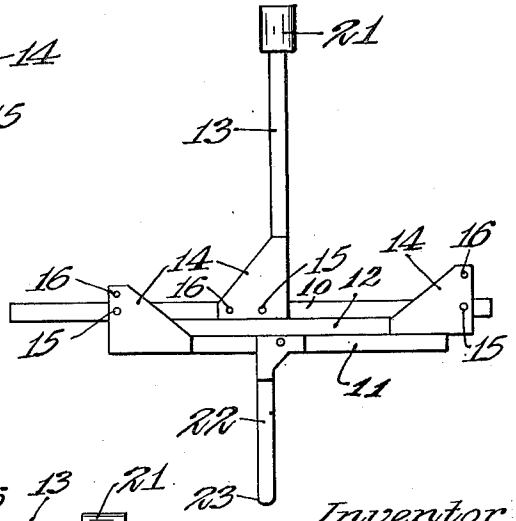
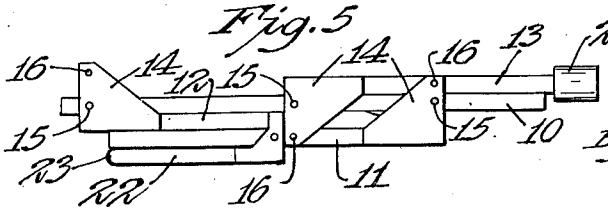


Fig. 5



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WHEEL CHANGING TOOL

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2 Claims. (Cl. 7—1)

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This invention relates to tools and more particularly to a tool for facilitating the removal and application of a motor vehicle wheel.

One of the objects of the invention is to provide a wheel changing tool having a pair of spaced lever arms which are adapted to be positioned beneath a vehicle wheel, and another lever arm for use as a handle to permit the application of a prying and lifting force to the wheel to facilitate its mounting upon the wheel supporting studs.

Another object of the invention is to provide a device of the character described above wherein the tool is collapsible to a compact position so that it can be stored in the vehicle without occupying too great a space.

Another object of the invention is to provide a tool of the type such as described above which can be used, a lever device for lifting the wheel which has a hub cap removing portion, a lug wrench portion and other structural and functional features embodied in one tool and at the same time readily collapsible for convenient storage.

These and other objects and advantages of the invention will more fully appear from the following description made in connection with the accompanying drawings, wherein like reference characters refer to the same parts throughout the views, and, in which:

Figure 1 is a perspective view of the tool and vehicle wheel showing the tool in its operative position;

Figure 2 is a plan view of the tool;

Figure 3 is an end elevational view;

Figure 4 is a view showing the tool partially folded and in position for use as a lug wrench;

Figure 5 is a plan view of the tool completely folded; and

Figure 6 is an enlarged fragmentary sectional view taken approximately on the line 6—6 of Figure 2.

The device includes a cross member 10 which has a pair of lever arms 11 and 12 extending outwardly therefrom at spaced points on said cross member. The lever arm 11, as best show in Figure 2, is positioned inwardly somewhat from the left hand end of the cross member 10. A third lever arm 13 extends outwardly from the cross member 10 from a point approximately midway between the lever arms 11 and 12 and in a direction opposite to that of said arms 11 and 12. Each of the lever arms 11, 12 and 13 is provided at its inner end with a pair of spaced generally triangular plates 14, said plates being welded or otherwise suitably secured to the lever arms. The

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spacing of the plates 14 permits them to fit over the cross member 10 relatively closely and each pair of plates is connected to the cross member 10 by pivot pins 15.

In Figure 6 there is shown a detail of the connection between the lever arm 12 and the cross member 10. It will be seen that the right hand triangular plate 14 in Figure 6 is provided with an aperture 16 in which a spring pressed ball 17 is adapted to fit. The ball 17 rests in a bore 18 in the cross member 10 and a helical spring 19 normally urges the ball 17 outwardly. This provides a yieldable retainer for the lever arm 12 and the structure is repeated in connection with lever arms 11 and 13.

The lever arm 12 has its outer and somewhat flattened end sharpened to provide a point 20 which is provided to facilitate the prying of hub caps from the vehicle wheels. The arm 13 is provided at its outer end with a removable nut socket 21 so that the device can be utilized as a lug wrench. When so used the arms 11 and 12 are folded in toward the cross member 10 and an auxiliary arm 22 which is pivotally mounted upon the lever arm 11 is swung outwardly to the position shown in Figure 4. One hand of the user is adapted to be held against the rounded end 23 of the auxiliary arm 22 and the other hand can be used to spin the wrench by application of a twisting force at either end of the cross member 10.

The cross member 10 is extended to the left as at 10a to provide a portion of the cross member which can be conveniently gripped in the event a wheel lug is difficult to loosen.

From the foregoing description it will be seen that I have provided a relatively simply constructed tool for assisting in changing vehicle wheels. The tool can be placed in the position of Figure 1 so that the wheel can be readily lifted with a lever action so that the operator can easily place the wheel with its apertures 24 in proper position to receive the studs upon which the wheel is mounted. Vehicle wheels are relatively heavy and it is of considerable advantage to have something which will elevate the wheel properly without requiring direct lifting of the entire weight of the wheel.

The device, as described above, can be readily folded to the position of Figure 5 so that it can be stored in a relatively small spacing. Furthermore, the lug socket 21 is removable and replaceable so that the tool is adapted for use with lugs of different size and shape.

It will, of course, be understood that various

changes may be made in the form, arrangement, details and proportions of the various parts without departing from the scope of my invention.

What I claim is:

1. In a wheel changing tool, a cross member, a pair of spaced lever arms extending outwardly from said cross member in one direction, a third lever arm extending outwardly from said cross member at a point approximately centrally of said pair of lever arms and in the opposite direction from that of said pair of arms, one arm of said pair having a pivotal connection with said cross member located laterally of the center of the arm a distance approximately that of the width of said arm, and the other arm of said pair having a pivotal connection with said cross member located laterally of the center of the arm a distance approximately twice that of the width of the arm.

2. A double use folding wheel changing tool, comprising a cross bar, a pair of arms pivotally connected to said cross bar adjacent opposite ends thereof and normally projecting when extended from one side of said bar to form both fulcrum levers for the tool in mounting a wheel on a vehicle and to also form opposed weighted arms of a speed wrench when the tool is used as a wrench said arms being pivoted to said bar to be collapsed one over the other against the bar, and a third lever arm pivotally connected to said cross bar intermediate said first arms and at the opposite side of said cross bar from said first arms in such relation that it may be folded against said bar, and a nut taking wrench head carried by said third arm at its outer end, said third arm when extended forming a handle for the tool in mounting a wheel on a vehicle and forming the support for said nut taking wrench head when the tool is used as a speed wrench.

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