Dec. 25, 1962 F. SHANDEL 3,069,945

DEVICE FOR REMOVING WHEEL NUTS AND BOLTS

Filed Dec. 7, 1959

3 Sheets-Sheet 1

Fig. 1.

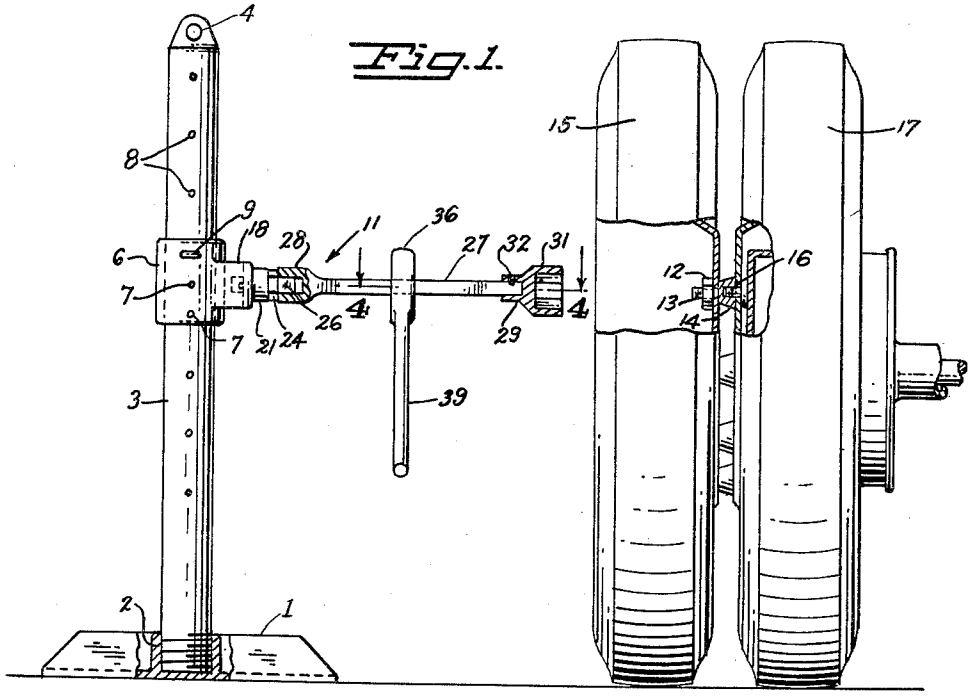


Fig. 2.

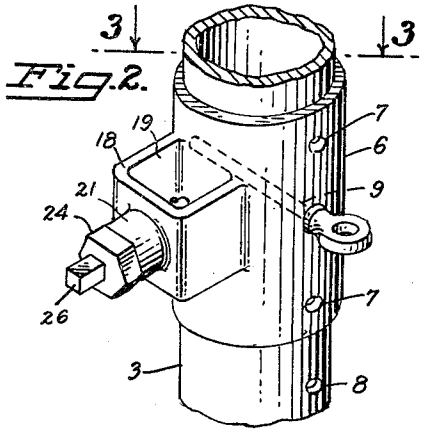


Fig. 3.

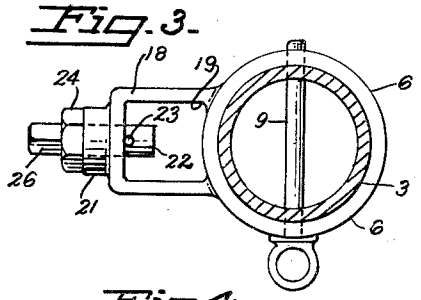


Fig. 4.

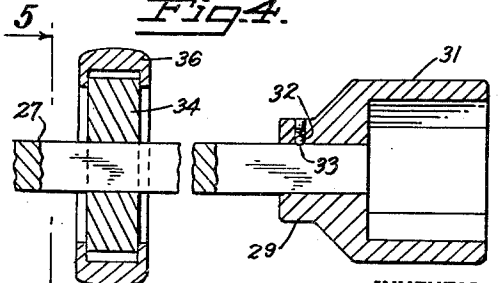
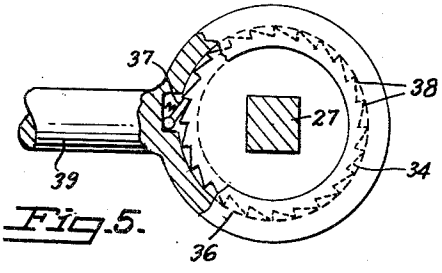


Fig. 5.



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Fig. 6.

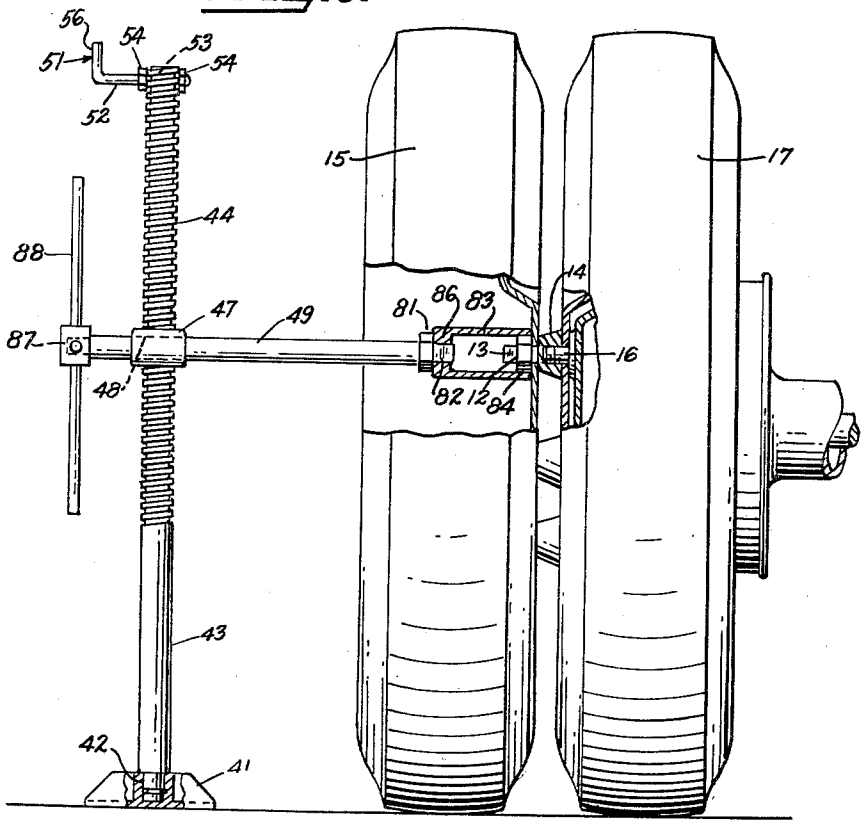


Fig. 7.

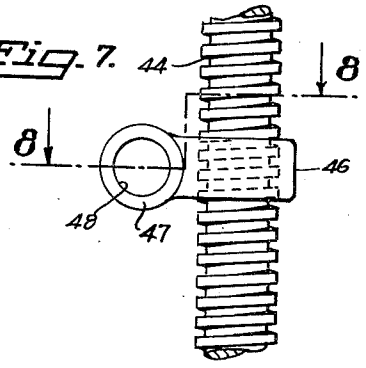
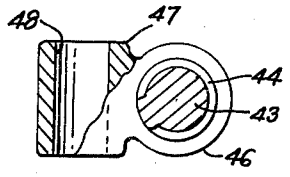


Fig. 8.



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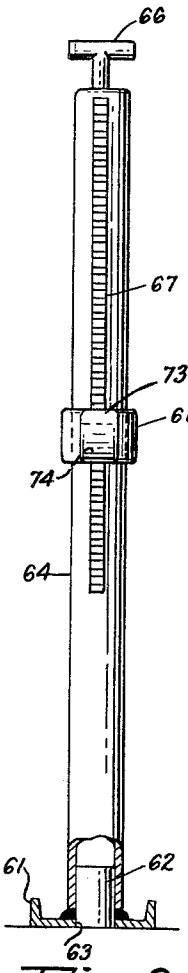


Fig. 9.

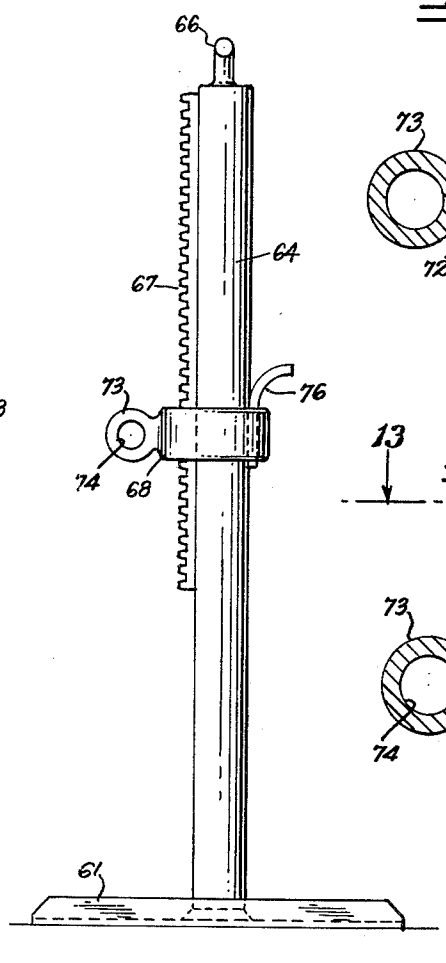
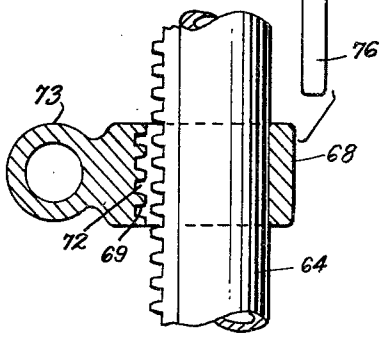
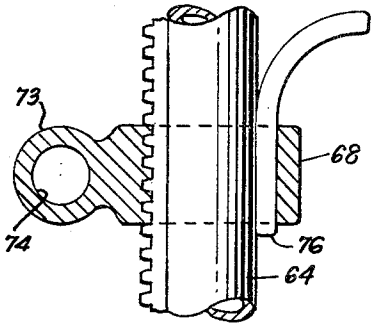


Fig. 10.

Fig. 11.



13 Fig. 12. 13



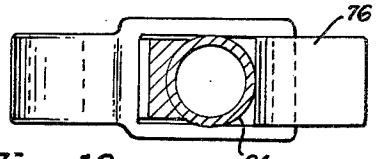


Fig. 13.

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DEVICE FOR REMOVING WHEEL NUTS AND BOLTS

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2 Claims. (Cl. 81—53)

This invention relates to a device for removing wheel nuts and bolts.

The primary object of the invention is to provide a device whereby a wrench can be aligned accurately with the respective nut or bolt to be loosened or tightened on large vehicle wheels, such as for instance in the dual wheels of buses, trucks or the like; and in which means are provided for quickly adjusting the wrench positon with respect to the particular nut or bolt and which provides a firm brace for the application of the wrench force.

A further object of the invention is to provide a wrench device which can be selectively applied to the hexagonal nut of large vehicle wheels as well as to the smaller rectangular end of the inner nut utilized particularly in connection with double wheels on buses, trucks and the like; and wherein the said selectively applicable wrench can be firmly braced and supported in accurate alignment with the respective nuts or bolts, means being provided for the quick adjustment for the registering of the wrench in said aligned position.

I am aware that some changes may be made in the general arrangement and combination of the several devices and parts, as well as in the details of the construction thereof without departing from the scope of the present invention as set forth in the following specification, and as defined in the following claims; hence I do not limit my invention to the exact arrangements and combinations of the said device and parts as described in the said specification, nor do I confine myself to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

With the foregoing and other objects in view, which will be made manifest in the following detailed description, reference is had to the accompanying drawings for the illustrative embodiment of the invention, wherein:

FIG. 1 is a partly sectional view of my device opposite a dual truck wheel.

FIG. 2 is a fragmental perspective view of the post with the adjusting bracket thereon.

FIG. 3 is a cross-sectional view on the lines 3—3 of FIG. 1.

FIG. 4 is a fragmental enlarged sectional view on lines 4—4 of FIG. 1.

FIG. 5 is a sectional view on lines 5—5 of FIG. 4.

FIG. 6 is a modified form of my device opposite a dual wheel.

FIG. 7 is a fragmental front view of the post with the bracket nut.

FIG. 8 is a sectional view of the lines 8—8 of FIG. 7.

FIG. 9 is a front elevation of another modified form of my device.

FIG. 10 is a side view of FIG. 9.

FIG. 11 is a fragmental view with the adjusting bracket in section in released position.

FIG. 12 is the same as FIG. 4 with the wedge in place to hold the bracket in place, and

FIG. 13 is a partly sectional top view on the lines 13—13 of FIG. 12.

In the form of the invention shown in FIG. 1, the wrench device or brace includes a base 1 in which is suitably formed an internally threaded hub 2. In the hub 2 is threaded the lower end of a post 3 which in the present form is a pipe. On the top of the post 3 is formed a handle grip or loop 4 to facilitate the carrying of the unit into suitable position relatively to the wheel.

A cylindrical bracket 6 is slidable on the exterior of the post 3. This cylindrical bracket 6 has a plurality, in this illustration three, holes 7 through opposite sides thereof capable of alignment with transverse holes 8 across the post 3. The bracket 6 can be raised or lowered to a desired height and then a pin 9 is inserted through the respective registering holes 7 and 8 to secure and hold the bracket 6 in adjusted position.

A reversible wrench device 11 can be suitably journalled in the bracket 6 in the aligned position so as to engage selectively either the hexagonal nut 12 bearing against the outer wheel 15 of a double wheel truck or bus, or the square or rectangular end 13 of a combination bolt and an inner nut 14, which latter threadedly engages a drum bolt 16 for clamping the inner wheel 17 in place.

In the specific form in FIGS. 1 to 5 a reversed channel or hub 18 is welded or integrally formed on one side of the cylindrical bracket 6 so as to form a cavity 19 therein. On one side of this channel hub 18 is formed a boss 21 through which extends a hole for the insertion of the stub shaft 22. A cotter pin 23 or the like on the stub shaft 22 inside of the cavity 19 retains the stub shaft 22 in position but permits its rotation. On the outer end of the stub shaft 22 is integrally formed a hexagonal nut 24 corresponding in shape and size to the usual nut 12 which holds outer wheel 15 in position. From this hexagonal integral nut 24 extends a nose 26 of rectangular cross-section corresponding generally in dimensions and shape to the square or rectangular end of the inner nut 14.

The wrenching device 11 includes a wrench bar 27 of rectangular cross-section, on one end of which is integrally welded a socket 28, in this illustration, of rectangular cross-section fitting over the nose 26 or bolt end 13. On the other end of the wrench bar 27 is fitted the hub 29 of a hexagonal socket wrench 31 which is held in position by a suitable ball catch 32 inside of the hub 29 engaging a dent 33 on the bar 27. Either end may be selectively engaged with the respective nut 24 and nose 26 on the stub shaft 22 as heretofore described.

The wrench bar 27 may be rotated in any suitable manner. In the present illustration a ratchet wheel 34 is slidable on the rectangular wrench bar 27. A ratchet ring 36 surrounds the ratchet wheel 34 in the usual manner and has on it a pivoted pawl 37 to engage the teeth of the ratchet wheel 34. A handle 39 extends from one side of the ratchet ring 36 whereby the ratchet ring 36 is oscillated so that the pawl engages the ratchet teeth 38 intermittently to apply force to the wrench bar 27. To reverse the direction of movement of the ratchet device, the hexagonal socket 31 can be pulled off the respective end of the wrench bar 27 and then the ratchet device can be slid off at the said end and reversed and replaced on the wrench bar.

In the operation of this device the post 3 is carried and placed opposite the wheel to be demounted or mounted, and the ratchet device 11 is placed in position. Then the pin 9 is removed and the bracket 6 is moved longitudinally on the post 3 until the respective end of the ratchet device 11 is in correct registry with the respective nut 12 on the wheel. Then the pin 9 is replaced to hold the bracket 6 in the adjusted position and turning force is applied to the ratchet device for loosening or tightening the respective nuts.

In the form of the invention shown in FIGS. 6 to 8 the wrench device or brace includes a base 41 of sufficient size to form a firm footing. In this base 41 is provided a suitable bearing 42 in which is held a vertical brace bar 43. The upper two thirds of this bar 43 is externally

threaded so as to form a threaded track 44 on which a bracket nut 46 travels when the bar 43 is rotated in the bearing 42. From the bracket nut 46 extends on one side an ear 47 which has therein a suitable circular bearing opening 48 to accommodate a wrench bar 49 as shown in FIG. 6. The upper end of the brace bar 43 is provided with a crank 51. This crank 51 in the present form includes a horizontal member 52 extended through a hole 53 transversely across the top of the bar 43 and is held securely in place by nuts 54 on the opposite sides of the bar 43. A vertical handle 56 is adapted to be gripped by a hand for facilitating the rotation of the bar 3.

In operation, this device is placed next to the wheel 15 and then the crank handle 56 is turned so as to rotate the bar 43 until the wrench bar 49 in the bearing 48 is aligned with the respective nut or bolt on the wheel 15. Thereupon force can be applied to the wrench bar 49 for loosening or tightening the nut or bolt in the bus wheel.

In the form of the invention shown in FIGS. 9 to 13 a base or footing 61 is provided with a bracket plug 62 welded in a base hole 63 on which plug 62 is fixedly secured a hollow brace bar 64. On the top of the brace bar 64 is provided a handle 66 to facilitate the carrying and holding of the brace bar 64. Along one side of the brace bar 64 is formed fixedly a rack rail 67 longitudinal with respect to the bar 64. A travelling bracket 68 has a generally rectangular interior to embrace and straddle the bar 64.

A rack anchor 69 is formed on one side of the bracket interior and has teeth adapted to engage the teeth of the rack rail 67. The rectangular interior opening in the bracket 68 leaves a space 72 at the rack anchor 69 so that the bracket 68 can be pulled laterally so as to pull the rack anchor 69 away from the teeth of the rack rail 67 and allow longitudinal adjustment along the bar 64. From the same side of the bracket 68 where the rack anchor 69 is, extends an ear 73 with a bearing opening 74 therein to accommodate the wrench bar 49 heretofore mentioned.

A hanger chock 76 is adapted to be pushed into the interior of the bracket 68 so as to pull the rack anchor 69 into engagement with a rack rail 67 and prevent the disengagement of the same. The upper portion of the hanger chock 76 is bent away from the bar 64 to facilitate this manipulation.

In the operation of this latter device the unit is carried by its carrying handle 66 to the wheel 15 and then the wrench bar 49 is aligned with the respective nut or bolt by pulling out the hanger chock 76 and then sliding the bracket 68 to the desired height and then inserting the hanger chock 76 to hold the bracket 68 at the adjusted height.

The wrench bar 49 heretofore mentioned is adapted for selective connection with either the outer hexagonal nuts 12 or with the rectangular ends 13 of the inner bolt nuts 14 on certain types of dual truck wheels or the like. The wrench bar 49, as shown on FIG. 6, has on one end a hexagonal nut 81 intergrally formed therewith, which is generally of the same size as the usual nuts 12 on such wheels. Out of the center of this integral nut 81 extends outwardly a nose 82 of generally rectangular cross-section which corresponds to the usual square end 13 of the inner nut 14 utilized, for instance, in dual wheels of buses. A reversible socket 83 is provided for use this wrench bar 49. The socket 83 has in one end a hexagonal socket 84 fitting over the nut 12 and in its other end a rectangular

socket 86 which fits over the rectangular nose 82 or the respective end 13 of the inner bolt nut 14.

The wrench bar 49 rotatably fits into the bearing opening 48 of the device shown in FIGS. 6 to 8 or into the bearing opening 74 of the device shown in FIGS. 9 to 11 and is extended through said bearings and is held there horizontally. On the outer end of the wrench bar 49 is provided a suitable nose 87 engageable by any suitable lever or hand wheel 88 as shown in FIG 6.

The wrench bar 49 is in the respective bearing 48 or 74 when the respective brackets 46 or 68 are adjusted so that the socket wrench 83 on the end of the bar 49 is in horizontal registry and engagement with the respective nut or inner nut of the wheel. Then force is applied by the hand wheel 88 or the like for turning the bar 49, which is firmly braced in my device, for loosening or tightening the respective outer nuts 12. Thereafter in order to loosen the inner nuts 14 the socket 83 is simply reversed and in the same single adjustment of the whole device the end of the inner nut 14 can be also engaged and loosened in practically the same operation.

The device is simple in structure and operation and is eminently adapted for its purposes to facilitate the loosening or tightening of the nuts or bolts in large vehicles such as single or double wheels for buses and the like.

I claim:

1. In a device for removing and tightening wheel mounting nuts and bolts, a base, a single post extended generally perpendicularly from the base, a sleeve slidable on the post, said post and said sleeve having longitudinal series of coacting interlocking elements to hold said sleeve in position, an ear ring extended from a side of said sleeve, said ring forming a journal, a wrench, a shaft portion of said wrench being journalled in said journal for engagement with the respective nuts and bolts of a vehicle wheel, and releasable means to hold said sleeve interlocked with said post at selected height.

2. The invention as defined in claim 1, wherein said interlocking elements consist of a rack rail longitudinal on one side of said post and a rack anchor in said sleeve, said rack anchor being adapted to engage the teeth of said rack rail, said sleeve having an inner aperture having a diameter greater than that of said post to permit shifting of said sleeve so as to move said rack anchor out of engagement from said rack rail for the longitudinal adjustment of said sleeve, and a securing wedge element insertable between said post and said sleeve so as to prevent the disengagement of said rack anchor from said rack rail.

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