

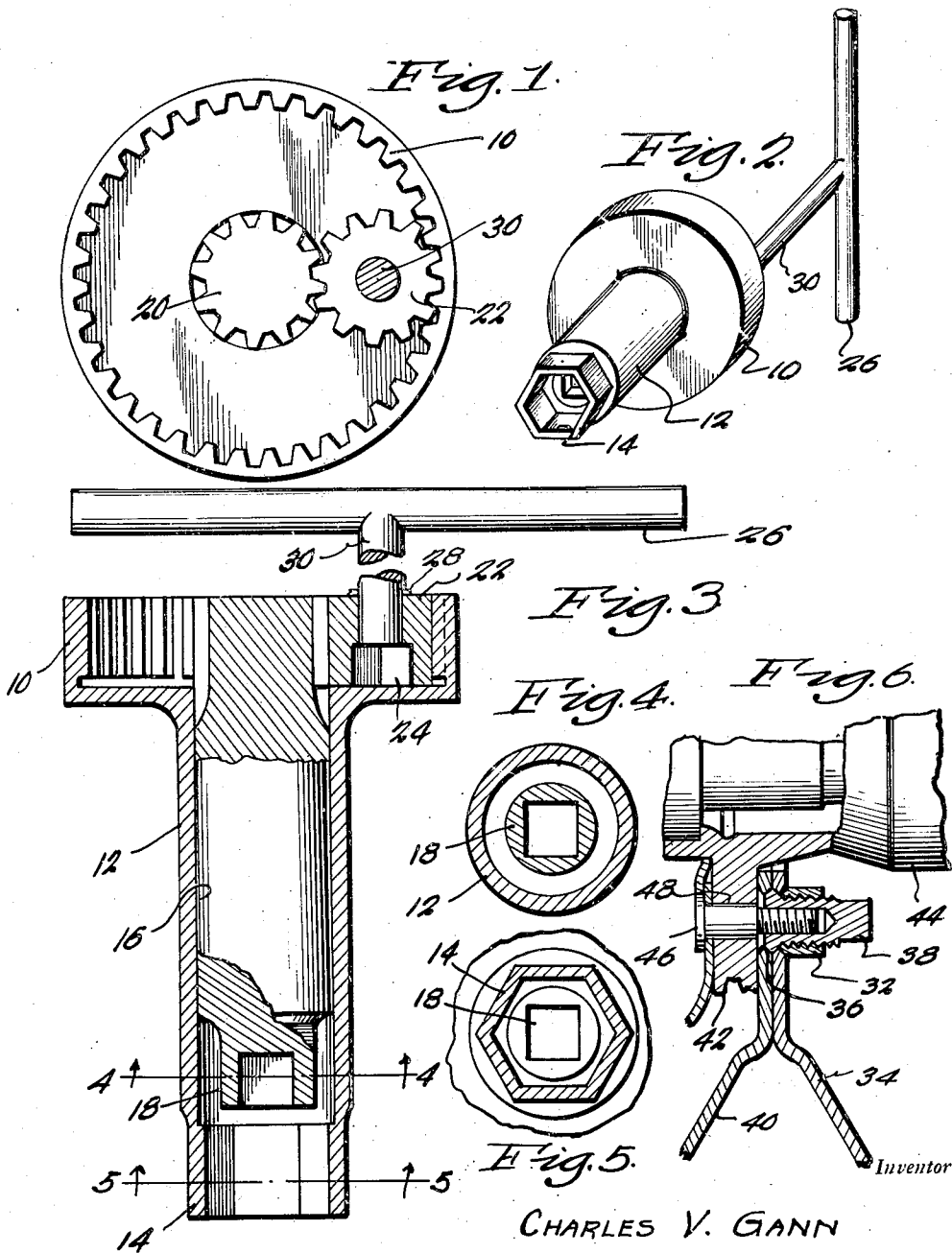
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GEAR OPERATED DUAL WRENCH

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GEAR OPERATED DUAL WRENCH

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1 Claim. (Cl. 81-56)

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This invention relates to wrenches and more particularly to a wrench adapted to facilitate the application and removal of outer nuts to or from sleeve nuts, that is, to provide torque in two directions simultaneously to two co-axial nuts and alternatively, by the use of a part of a wrench, to apply torque directly to one of said nuts.

A primary object of this invention is to provide a wrench which is particularly well adapted for removal and application of the outer nuts, which retain the outer wheel of dual wheels commonly used in heavy trucks, from or to the inner sleeve type nut used to retain the inner wheel of such dual wheel construction. In this connection it should be noted that the chief use of this wrench is in the removal of the outer nut rather than the application of such nut because both nuts are ordinarily of the same type thread and therefore the tightening of the nuts usually presents little difficulty and any type of ordinary wrench may be used for that purpose. On the other hand, the removal of the outer nuts from the inner sleeve type nuts is much more difficult to accomplish without loosening of the inner sleeve nuts, which is a great disadvantage when it is desired to remove the outer wheel only.

Another object of this invention is to provide a wrench, a part of which is adapted for the engagement of the inner sleeve nut only, allowing the simultaneous removal of both parts of the dual wheel, and for the removal of the inner of the two wheels after the outer wheel has been removed.

Another object of this invention is to provide such a wrench in a form which makes it inexpensive and practicable to manufacture, simple and convenient to use, and which is sturdy and generally adapted for durable and efficient service.

With these and other objects in view as will appear hereinafter, this invention consists of certain novel features of construction, combination and arrangement of parts as will be hereinafter described in detail and particularly set forth in the appended claim, reference being had to the accompanying drawings which form a material part of this application, and in which:

Figure 1 is a top plan view of this invention;

Figure 2 is a perspective view of this invention;

Figure 3 is a vertical sectional view, with parts shown in elevation to amplify the illustration, the handle portion being broken and foreshortened to conserve space in the drawings;

Figure 4 is a sectional view taken on the line 4-4 in Figure 3;

Figure 5 is a sectional view taken on the line 5-5 in Figure 3; and,

Figure 6 is a view, largely sectional, of a portion of the dual wheel structure, which is referred

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to in this specification as illustrative of the type of structure with which this invention may be advantageously used.

Similar characters of reference refer to similar or identical parts throughout the several views of the drawings.

As shown in the drawings an interiorly geared member, hereinafter referred to simply as the orbit gear 10, is formed integrally with a tubular member 12, which is relatively long and is designed with a socket member 14, indicated in the drawings as of hexagonal shape, at the end remote from the orbit gear 10. The shaft 16, of a length slightly less than that of the tubular member 12, and of an exterior diameter slightly less than the interior diameter of said tubular member, is adapted to be rotated therein, as hereinafter described.

One end of the shaft 16 is formed with a socket member 18, illustrated in the drawings as a square socket, smaller than the hex socket 14 and spaced therefrom a short distance. The other end of the shaft 16 is formed with a sun gear 20, of considerably smaller diameter than the orbit gear 10.

A planetary gear 22, of a diameter equal to the difference of the diameters between said sun gear and said orbit gear, simultaneously engages these gears.

This planetary gear 22 has a recess 24 corresponding in size and shape with the socket 18, and a T-shaped handle 26 which may, if desired, be integrally secured to said planetary gear by welding as indicated by the numeral 28. An alternative structure for this gear and handle includes provision of a shank portion 30 with a socket 24 integral therewith and insertable in a slightly larger recess in the gear 22 which gear will be turned when the shank portion 30 is turned with the parts assembled as indicated in Figure 3 but the gear in this case being left free to travel along the shaft towards the cross member of the handle 26. This allows the gear 22 to be moved away from the socket portion of the handle when the handle is being used apart from the rest of the wrench, as hereinafter described more fully.

In using this device the tool is placed with the socket portion 14 engaging the hexagonal nut 32 which holds, as illustrated in Figure 6, an outer wheel portion 34 of a dual wheel construction, jammed against the flange 36 of the sleeve nut 38 which, in turn, holds the inner wheel member 40 tightly against the annular flange 42, an integral portion of the hub 44, all these members being of more or less standard design in common use where dual wheels are employed. A plurality of heavy stud bolts, arranged in a ring of holes 48 in the flange 42, completes this structure. It will be readily seen that when the socket member 14 is in engagement with the outer nut

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32, the socket 18 may be made to engage the inner nut 38, and when force is applied to the handle 26 to turn the planetary gear 22 in the proper direction the sleeve nut 38 may be held against rotation while the outer nut 32 may be backed off releasing the outer wheel 34. It will thus be seen that the prime object of this invention has been achieved. When it is desired to remove the sleeve nut and the outer nut 32 together, as in the removal of dual wheel as a unit, the handle 26 and its attached gear 22 is removed from the remainder of the wrench, simply by pulling longitudinally on the handle 26, and the socket 24 is then inserted over the end of the nut 38, so that both nuts will be backed off together, it being preferable however to loosen the nut 32 from the nut 38 prior to backing off the nut 38, and this can be done by turning the handle 26 in the same direction when the assembled wrench is applied to both nuts as herebefore described. Further use of this invention will be evident to those using this type of wrench and though there has been shown a particular embodiment of this invention, this application is not limited to this particular embodiment, but it is desired to include within the scope of this invention the construction, combination and arrangement of parts substantially as set forth in the appended claim.

Having thus described this invention what is

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claimed as new and desired to be secured by Letters Patent is:

A dual socket wrench including, a tubular member having an annular orbit gear at one end thereof and a large socket at the other end thereof, a shaft rotatably mounted within said tubular member having a sun gear at one end thereof within said orbit gear but spaced therefrom and having a smaller socket at the other end thereof, a planetary gear adapted for simultaneously engaging said orbit gear and said sun gear, and handle means to turn said planetary gear, said handle means comprising a T-member secured directly to said planetary gear and disposed parallel to said shaft, and said planetary gear and handle being removable from the remaining portions of the wrench.

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