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Fig. 1

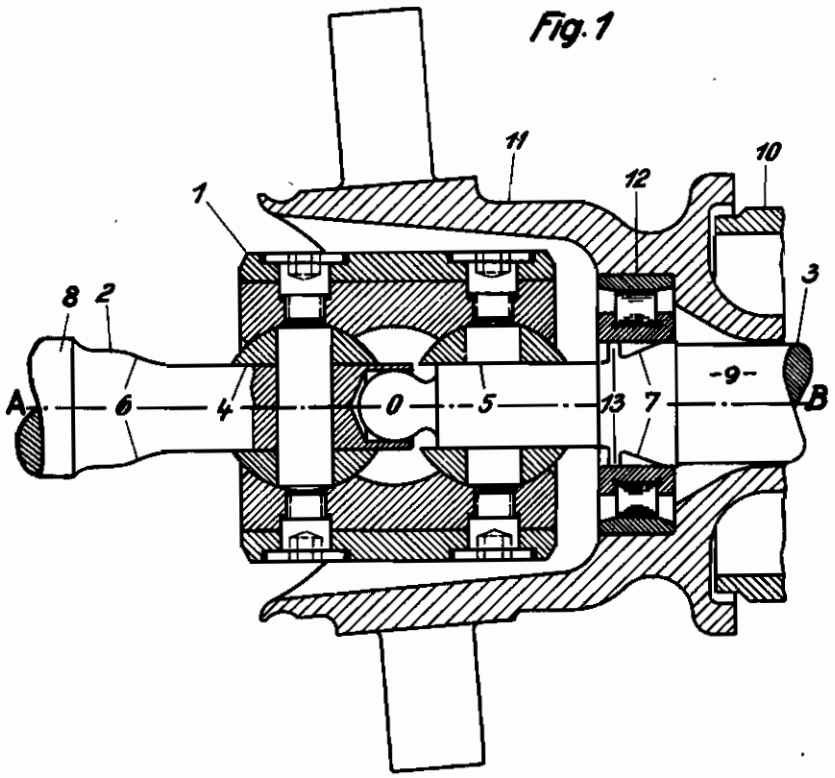


Fig. 2

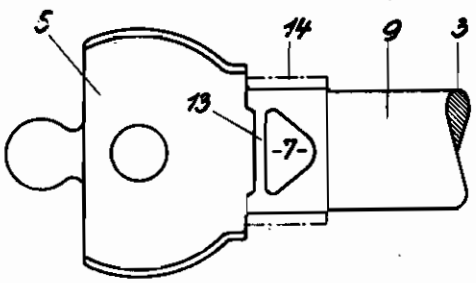
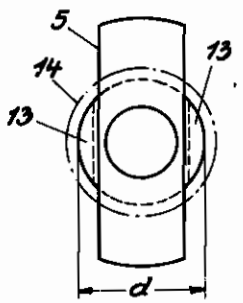


Fig. 3



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This invention relates to a shaft journal, and more particularly to the journaling of a shaft section whose diameter increases or decreases from one end of the section to the other.

An object of this invention is an arrangement for rotatably mounting a shaft having a transition section of changing diameter, at this section, by the use of simple and inexpensive bearing means.

Another object of this invention is to provide a simple and inexpensive wheel shaft mounting for the steerable driving wheels of a vehicle.

Still another object of this invention is to provide a light, compact and inexpensive steering knuckle for driven vehicle wheels, embodying a universal joint and wheel shaft bearing.

These and other features, capabilities and advantages of the invention will appear from the subjoined detailed description of one embodiment and a modification thereof, illustrated in the accompanying drawing:

Fig. 1 is a transverse section through a steering knuckle, showing a universal joint and wheel shaft mounting in accordance with the present invention;

Fig. 2 is a top plan view of the wheel shaft of Fig. 1; and

Fig. 3 is an end view of the wheel shaft, illustrating a modified construction.

For the purpose of driving of steerable wheels, there has been illustrated in Fig. 1 a universal joint 1 having a construction known per se, for interconnecting the driving shaft 2 with the wheel shaft 3. The type of universal joint illustrated requires flattened shaft ends 4 and 5, respectively parallel to the shaft axes A—O and O—B, connected to the main shaft sections 8 and 9 by transitions 6 and 7, whose diameters increase from the width of the flattened end sections 4 and 5 to substantially the width of the main shaft sections 8 and 9. The shaft 2 is adapted to be driven through another universal joint and differential gear (not shown), while the shaft 3 drives the wheel, the hub of which is indicated at 10.

In previous constructions of this character, the wheel shaft has been supported in the steering knuckle by bearings positioned about the main wheel shaft section (9), creating a large, cumbersome and relatively heavy construction. By reason of the present invention, however, it is possible to reduce the size and weight of the steering knuckle by journaling the shaft at its transition section 7. In the form of invention illustrated in Fig. 1, the steering knuckle 11 is provided with a roller bearing 12, one race of which is seated in the knuckle and the other race of which bears upon the large end of the transition section 7, and additionally upon a radial rib 13, formed integrally with the shaft and extending from the small end of the transition section so that its outer periphery is of the same diameter as that of the large end of the transition section. Thus, by reason of the special construction here used, it is possible to position the necessary bearings at a point which could not heretofore be utilized, particularly by simple bearing means, and thus a section of the shaft which was previously not utilized, is used and the size and weight of the steering knuckle as a whole can be reduced. It is, of course, obvious that instead of using a roller bearing, any other type of suitable anti-friction bearing such, for example, as a ball bearing could be used.

The manner in which the radial rib is formed on the wheel shaft is also indicated in Figs. 2 and 3, which also indicate a modified construction. Instead of using a so-called anti-friction bearing in the wheel knuckle, it is possible by reason of the present construction to use a plain bearing in the steering knuckle, in which case a suitable bushing 14 will be drawn over the shaft and will be firmly supported upon the large end of the transition section 7 and the radial rib 13. The bushing 14 may be of steel or any other suitable material.

The number of radial ribs provided upon the transition section of the shaft is without importance with respect to the basic principles of the present invention, it being only important that the outer diameter (d, Fig. 3) of such rib be equal in diameter to the largest end of the transition section.

While the instant invention is of particular application in connection with the mounting of driving wheel shafts in steering knuckles for power vehicles, it is, of course, in its broadest aspects applicable to other constructions where it is necessary or desirable to provide a bearing support about the transition section of any shaft.

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