To all whom it may concern:

Be it known that I, Robert R. Monday, a citizen of the United States, residing at Fountain City, in the county of Knox and State of Tennessee, have invented certain new and useful Improvements in Main-Shaft Carriers, of which the following is a specification.

This invention relates to carriers adapted to be slipped onto the rear section of the main drive shaft of a commercial type of gear drive axle, such as that known as "the Torbenson gear drive axle", and to be attached to the stationary axle thereof, so as to act as a support and carrier for said rear drive shaft section and to effectively maintain the driving gear of said shaft section in mesh with the ring gear of the differential, whereby these devices will operate more efficiently and have a longer period of usefulness.

With the above general object in view and others that will become apparent as the nature of the invention is better understood, the same consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawings and claimed.

In the drawings wherein like reference characters indicate similar parts in the several views, and wherein:

Figure 1 is a fragmentary view, partly in plan and partly in horizontal section of a gear drive for motor vehicles equipped with my improved main shaft carrier.

Figure 2 is a top plan view of the carrier detached, and

Figure 3 is an elevational view of the device shown in Figure 2.

Referring more in detail to the views, the type of gear drive to which my invention is applicable embodies a stationary axle 5 of I-beam formation in section, and upon the ends of which the usual driving wheels are adapted to be journaled. The central portion of the axle 5 is provided with an aperture as shown in Figure 1, and a main shaft bearing housing 6 projects forwardly therethrough. The housing 6 is rigidly carried by the differential housing 7, and is provided interiorly with roller bearings for the rear main shaft 8, which bearings are not shown. The differential housing 7 is of the well known type which encloses a differential gearing including the ring gear 7, which meshes with a bevelled gear 9 fastened upon the rear end of the shaft section 8. This provides a drive for the rear axle sections 10 and 11 which are inclosed in the usual manner by means of the housings 12 projecting from opposite sides of the housing 7, and the axle sections 10 and 11 are adapted to be geared to the rear driving wheels as is well known in the art.

In the construction thus far described, it has been found that considerable play is allowed between the driving parts and the same has resulted in considerable trouble, due to the gears 7 and 9 becoming disengaged or so nearly disengaged as to result in their teeth being "stripped". It is the object of the present invention to furnish additional support for the shaft section 8, whereby it is effectively braced against vibration, and wherein means is provided for holding the section 8 against lateral or longitudinal play, so that the gears 7 and 9 are effectively held in mesh for an indefinite period.

In accomplishing the above, I provide a carrier embodying a casing 13, which is preferably of the form shown including a lower section 14 having an upper section 15 bolted thereto as at 16, the sections being suitably notched at their rear ends as at 17 for reception of the flanges of the axle 5 when the carrier is positioned in front of and against said axle as shown in Figure 1. The carrier is bolted to the axle as at 18 and is open at its rear end so as to be slipped on to the bearing housing 6. It will be understood that the main drive shaft embodies the usual forward section operatively connected to the engine of the vehicle and adapted to be coupled to the rear shaft section 8 by means of a universal joint, one member of which is shown at 19. This universal joint section 19 is slipped on to the tapered forward end of the shaft section 8, and there retained by means of a nut 20 threaded upon the forward end of the shaft section 8. The forward end of the carrier embodies an integral annular portion 21, which is centrally apertured and which has the walls of the aperture thereof rabbed as at 22 to removably receive a ball bearing embodying inner and outer race ways, which bearing is denoted generally by the numeral 23. A plate 24 is suitably bolted upon this end of the carrier to retain the bearing 23 in place, and the inner race way of the bearing is provided with a tapered
bore adapted to fit the tapered rear end of the universal coupling section 19 as shown. In assembling the device, it is only necessary to disconnect the forward section of the main drive shaft from the section 8 thereof, so as to allow removal of the universal coupling section 19. The carrier is then slipped onto the forward end of the shaft section 8 and into the inner race way of the bearing 23 in which it tightly fits. The nut 20 is then screwed upon the end of the shaft section 8 and the sections of the main drive shaft are then coupled by connecting the sections of the universal joint. With the parts thus disposed, it will be seen that the shaft section 8 is effectively supported against lateral or longitudinal vibration or play, so that the gears 7 and 9 will be effectively maintained in mesh and held against vibration for insuring continued efficient operation of the driving mechanism.

Having thus described my invention, what I claim as new, and desire to secure by Letters-Patent, is:

1. A motor vehicle drive construction comprising in combination with a fixed axle adapted to have the usual driving wheels journaled on the ends thereof and provided with a central opening, and a differential gearing embodying driving axles and a differential housing disposed rearwardly of said axle, said differential housing embodying a forwardly projected bearing housing extending through the opening of the fixed axle and having a rear main drive shaft section journaled therein with its rear end geared to the differential mechanism, of an auxiliary carrier attached to the axle and enclosing said bearing housing, said carrier further embodying a forward bearing for the rear drive shaft section forwardly of said bearing housing, and a universal coupling section secured upon the forward end of said rear drive shaft section and including a tapered end fitting in a member of the carrier bearing.

3. A carrier for the rear main drive shaft section of a vehicle construction embodying a fixed rear axle upon the ends of which the driving wheels of the vehicle are adapted to be mounted comprising a hollow member open at its rear end, and provided with a centrally apertured front wall, the walls of the aperture being provided with a rabbet, a ball bearing seated in said rabbet, and means to detachably fasten the rear end of the carrier to the fixed axle.

4. In combination with the fixed rear axle of a vehicle construction having a central opening; and the differential gearing including a housing disposed rearwardly of the fixed axle, and a bearing housing projecting forwardly through the opening of the fixed axle, and having a main drive shaft section journaled therein geared to the differential, of a carrier fixed to said fixed axle, and surrounding the bearing housing, and means at the front ends of the carrier and the rear drive shaft section for holding said shaft section against longitudinal or lateral vibration for maintaining the ring gear of the differential operatively connected with the rear end of the drive shaft section.

5. In combination with the fixed rear axle of a vehicle construction having a central opening, and the differential gearing including a housing disposed rearwardly of the fixed axle, and a bearing housing projecting forwardly through the opening of the fixed axle, and having a main drive shaft section journaled therein geared to the differential, of a carrier fixed to said fixed axle, and surrounding the bearing housing, and means at the front ends of the carrier and the rear drive shaft section for holding said shaft section against longitudinal or lateral vibration for maintaining the ring gear of the differential operatively connected with the rear end of the drive shaft section, said means embodying a ball bearing mounted in the forward end of the carrier and including an inner race way having a tapered bore, and a rear universal joint section having a tapered end fitted on the forward end of the main drive shaft section and into the inner race way.

In testimony whereof I affix my signature.

ROBERT R. MONDAY.