A. G. SENSTIUS.

PROPELLER SHAFT MOUNTING.

APPLICATION FILED NOV. 22, 1918.

1,390,464. Patented Sept. 13, 1921.

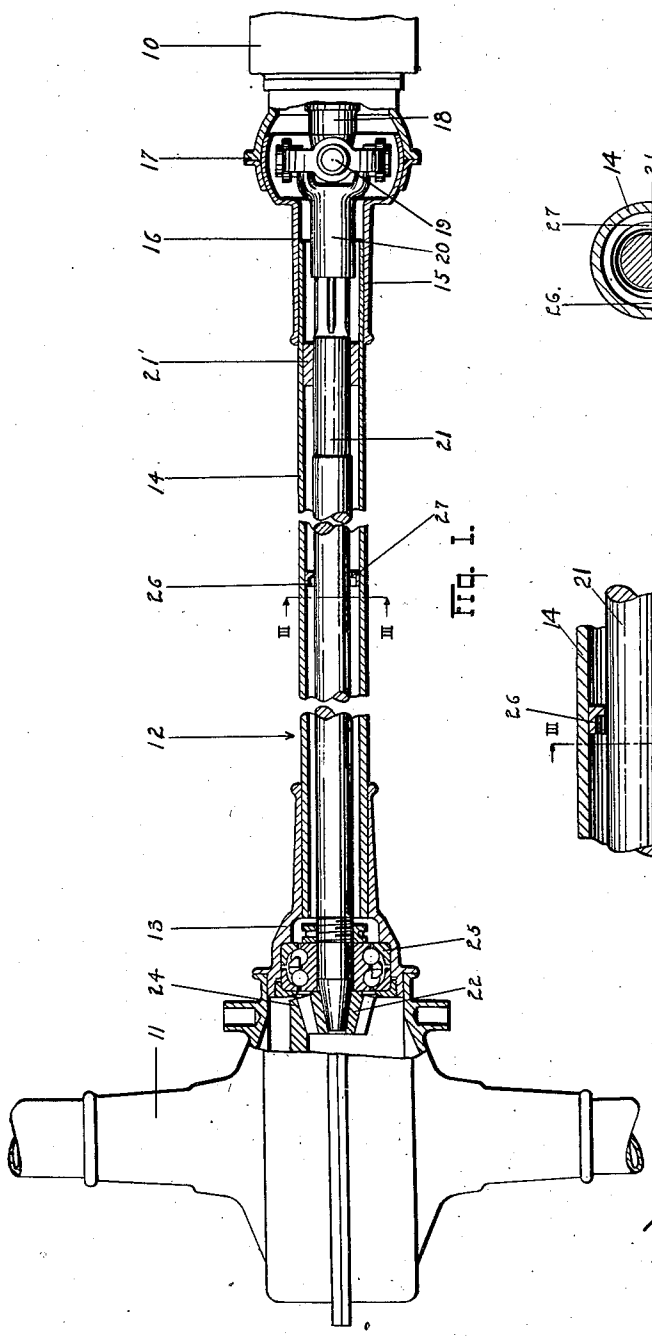


FIG. I.

FIG. III.

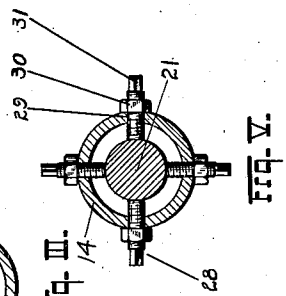


FIG. V.

FIG. II.

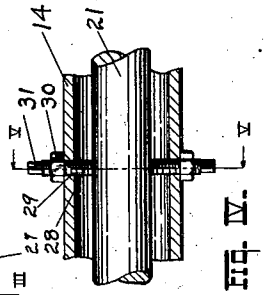


FIG. IV.

INVENTOR.

Antoine G. Senstius

BY Chester A. Braselton

ATTORNEY

UNITED STATES PATENT OFFICE.

ANTOINE G. SENSTIUS, OF TOLEDO, OHIO, ASSIGNOR TO THE WILLYS-OVERLAND COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

PROPELLER-SHAFT MOUNTING.

1,390,464. Specification of Letters Patent. Patented Sept. 13, 1921.

Application filed November 22, 1918. Serial No. 263,780.

To all whom it may concern:

Be it known that I, ANTOINE G. SENSTIUS, a citizen of the United States, residing at Toledo, county of Lucas, and State of Ohio, have invented certain new and useful Improvements in Propeller-Shaft Mountings, of which I declare the following to be a full, clear, and exact description.

My invention relates to propeller shaft mounting, and more particularly to a form of propeller shaft mounting designed for preventing whipping or vibrating of the propeller shaft, when a heavy load is being carried thereby, or when the propeller shaft is subjected to a sudden shock, such as may be occasioned by a sudden change in the amount of the load.

One object of my invention is to provide a device of this character, which will prevent the whipping or vibrating of that portion of a propeller shaft which is intermediate the bearings, and which has a tendency to buckle or vibrate when suddenly subjected to a heavy strain thereon.

A further object of my invention is to provide a device of this character which is simple in construction and efficient in operation, under varying conditions of use.

Further objects of this invention relate to economies of manufacture and details of construction as will hereinafter appear from the detailed description to follow.

I accomplish the objects of my invention in one instance by the devices and means described in the following specification, but it is evident that the same may be varied widely without departing from the scope of the invention, as pointed out in the appended claims.

A structure constituting one embodiment of my invention, which may be the preferred, is illustrated in the accompanying drawing, forming a part hereof, in which:

Figure I is a horizontal sectional view of a propeller shaft casing, showing my improved mounting as applied to the propeller shaft therein.

Fig. II is an enlarged view of that portion of the structure shown in Fig. I, showing the mounting as applied to the propeller shaft.

Fig. III is a vertical sectional view of the propeller shaft casing along the line III—III of Figs. I and II.

Fig. IV is an enlarged horizontal sectional view of a portion of a propeller shaft casing, showing a modified form of my propeller shaft mounting.

Fig. V is a vertical sectional view of a propeller shaft casing taken along the line V—V of Fig. IV.

My invention comprises generally devices of the character set forth designed to be applied to a rotating shaft passing through a casing, at a point intermediate the bearing portions thereof, for the purposes set forth above.

I have illustrated my device as applied to the usual propeller shaft of an automobile, such as usually have a relatively long portion of the propeller shaft intermediate of the bearings thereof.

Referring to the numbered parts of the drawing, I have shown the usual transmission casing 10 and rear axle housing 11, which are connected by the propeller shaft housing 12. The propeller shaft housing 12 comprises a portion 13 attached to the rear axle housing in any suitable manner, to which is securely attached the main propeller shaft casing 14, which is in turn connected by a slip joint 15 to that portion 16 of the universal joint casing which extends rearwardly from the transmission casing. Extending from the transmission casing into the universal joint housing 17 is a main transmission shaft 18, connected by means of a universal joint 19 and a slip joint 20 to the usual propeller shaft 21. The propeller shaft 21 is mounted for rotation at a point near its forward end in a bearing member 21′ carried by the main portion 14 of the propeller casing. The propeller shaft 21 carries a bevel driving pinion 22 securely attached thereto at a point near the rear end of the propeller shaft, which bevel driving pinion meshes with a bevel driving ring 24, to drive the rear axle sections (not shown) in the usual manner. At a point near its rear extremity the propeller shaft 21 is mounted in a bearing 25 supported by the section 13 of the housing. Intermediate the bearings 21′ and 25 is a ring 26, which is firmly attached to the casing in any suitable manner, and is provided at one end with an inturned flange 27. The inner circumferential face of this flange portion lies in proximity to the outer circumferential surface of the propeller shaft, the diameter of the circular opening formed by the flange being a little larger than the diameter of the pro-

peller shaft, so that normally the propeller shaft runs freely between the two bearings. Any whipping or vibrating of the propeller shaft between the bearings, such as might be occasioned by a heavy load upon the propeller shaft, or by a sudden increase in load, will be prevented by the flanged collar positioned as shown intermediate of the two bearings.

A modified form of my invention is shown in Figs. IV and V, wherein a plurality of set screws 28 are fitted into interiorally threaded openings 29 in the propeller shaft casing 14 at diametrically opposed points thereof, and held in adjusted position by clamping nuts 30. The set screws 28 are provided with angular end portions 31 for securing the proper adjustment of the set screws relative to the propeller shaft. The set screws 28 may be positioned in a common vertical plane in the casing and their inner ends, when properly adjusted, may be separated from the propeller shaft by slight clearance space, which permits the propeller shaft to normally run freely in the bearings without touching the ends of the set screws. When, however, a heavy load is suddenly placed upon the propeller shaft, such as would cause a whipping or vibrating of the propeller shaft, such vibration is overcome by the shaft striking the end of the set screws. Thus it will be seen that I have provided a simple and economical means, which is capable of being readily positioned in the casing, for overcoming any excessive vibration of the propeller shaft in a direction transverse thereof, such as is liable to occur when the shaft is suddenly subjected to a considerable strain, as by a sudden increase in the power exerted upon the rear axle sections. It is obvious that such vibrations, when set up in the propeller shaft, tend to place an undue strain thereon if not counteracted, and that by the means shown and described the amplitude of these vibrations will be diminished so as to practically eliminate the same. While it is old to insert a plurality of bearings for supporting the propeller shaft at intervals along its length, my invention obviates the necessity of using an intermediate bearing where a relatively long propeller shaft is employed, by substituting means which normally provides a slight clearance space around the propeller shaft, while extending sufficiently close to the shaft to dampen any vibration which may be set up therein.

While I have shown and described in considerable detail a specific embodiment of my invention, it is to be understood that this showing and description is illustrated only for the purpose of rendering my invention more clear, and that I do not regard the invention as limited to the details of construction illustrated or described, nor to any of them, except in so far as I have included such limitations within the terms of the following claims, in which it is my intention to claim all novelty in my invention broadly, as well as specifically.

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

1. In a device of the class described, in combination, a propeller shaft, bearings near the ends thereof, and means supported independently of the shaft intermediate the bearings for preventing whipping of the propeller shaft.

2. In a device of the class described, in combination, a propeller shaft, bearings therefor, and means supported independently of the shaft intermediate the bearings providing a slight clearance space for the propeller shaft for preventing whipping of the same.

3. In a device of the class described, in combination, a propeller shaft, bearings therefor, and means supported independently of the shaft intermediate the bearings for preventing vibration of the propeller shaft.

4. In a device of the class described, in combination, a propeller shaft, bearings therefor, and means supported independently of the shaft for preventing excessive vibration of that portion of the propeller shaft positioned between the bearings.

5. In a device of the class described, in combination, a propeller shaft, a casing therefor, propeller shaft bearings supported by the casing, and means carried by the casing for preventing undue vibration of the propeller shaft.

6. In a device of the class described, in combination, a propeller shaft, a casing therefor, propeller shaft bearings supported by the casing, and a plurality of means carried by the casing for preventing vibration of the propeller shaft.

7. In a device of the class described, in combination, a propeller shaft, a casing therefor, propeller shaft bearings, and a plurality of set screws carried by the casing intermediate the said bearings for preventing vibration of the propeller shaft.

8. In a device of the class described, in combination, a propeller shaft, a casing therefor, propeller shaft bearings, the casing and bearings being rigidly supported with respect to each other, and means carried by the casing intermediate the bearings and normally free of the shaft for preventing vibration of the shaft.

In testimony whereof I affix my signature.

ANTOINE G. SENSTIUS.