

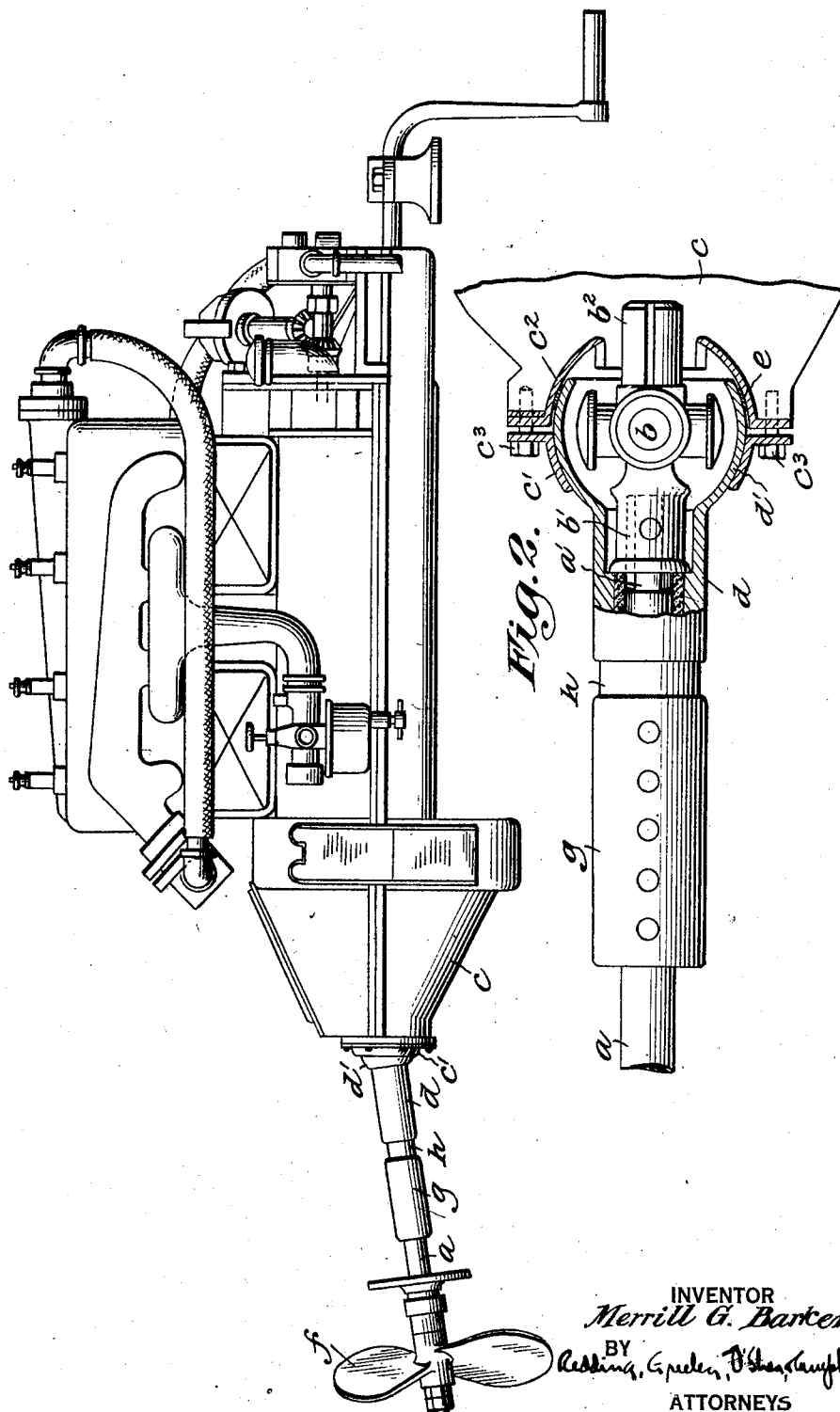
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MARINE ENGINE

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MARINE ENGINE.

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This invention, while relating generally to marine motors, is more particularly concerned with the conversion of automotive engines to marine use by the application thereto of special devices adapting it to the somewhat dissimilar requirements of such service. For instance, motors for Ford cars if adapted to marine purposes will be found economical for the propulsion of small types of boats. Accordingly, the improvements herein are described with particular reference to their incorporation in Ford motors.

In my co-pending application, Serial No. 745,381, there are set forth and described means whereby a standard Ford motor may be adapted to marine purposes. These means include a water pump mounted at the front of the engine and driven by the cam shaft and means to remount the standard timer so as to afford space for the water pump, the timer also being driven by the cam shaft. There is also set forth and described in the said application means whereby the propeller shaft may be adapted to the specific requirements of a propeller shaft for a marine engine. This application, which is a division of my said application, Serial No. 745,381, is concerned specifically with such last named improvements.

In order to adapt the propeller shaft for use with a marine engine it is necessary to provide means to afford a greater degree of angularity therefor and to resist the axial thrust impressed thereon by the churning propeller. It is, therefore, an object of this invention to provide for such angularity and to resist such thrust.

It is a further object of the invention to provide means to retain the oil within the transmission housing of the engine and to exclude dirt and water therefrom.

Accordingly, the transmission shaft is connected through a universal joint to the end of the transmission shaft in the transmission casing. The propeller shaft is journaled proximate its end in a sleeve which is formed with a spherical end. The spherical end of the sleeve is secured within the transmission casing by means of spherical retaining rings which are bolted thereto. In order to relieve the universal joint of axial thrusts impressed upon the shaft a collar is pinned to the shaft proximate the outer end of the sleeve and a thrust bearing interposed between the collar and the sleeve.

In this manner all axial thrusts impressed upon the shaft are transmitted to the transmission casing and are not impressed upon the universal joint.

The invention may be more fully ascertained from the following description of a preferred embodiment thereof which is illustrated in the accompany drawings. In the drawings:

Figure 1 is a side elevation of a motor showing the propeller shaft connected thereto in accordance with the invention to adapt it to marine uses.

Figure 2 is a fragmentary view, partly in plan, and partly in section, showing the universal connection and the means to transmit thrusts to the transmission casing.

As the description proceeds it will appear that some of the features of the invention may be useful in adapting other types of motor than the Ford to marine usage and for that reason the drawings illustrate the engine itself very conventionally although the front and rear ends correspond to those of a Ford motor.

The propeller shaft *a* is connected at its end *a'* with the element *b'* of a universal joint *b*, the other element *b''* of which is connected to the crank shaft of the engine through a transmission within the housing *c*. The end *a'* of the propeller shaft is journaled beyond the universal joint *b* within a sleeve *d* which is formed with a spherical end *d'* which is secured within the transmission casing *c* by means of retaining rings *c'*, *c''*. The retaining rings *c'*, *c''* are of generally spherical form and are bolted to the casing by bolts *c'''*. A packing strip *e* may be interposed between the ring *c''* and the spherical end *d'* of the sleeve in order to retain oil within the transmission casing and to exclude water and foreign substances therefrom. In order to relieve the universal joint *b* of axial thrusts impressed upon the shaft by the propeller *f* a collar *g* is pinned to the shaft proximate the end of the sleeve further from the universal joint and a thrust bearing *h* interposed between the collar and the sleeve. In this way axial thrusts will be transmitted from the propeller shaft through the bearing *h* and the sleeve *d* to the transmission casing *c* through the rings *c'*, *c''*.

It will be apparent that the spherical end of the sleeve *d* and the spherical rings *c'*, *c''*

c^2 permit the propeller shaft to assume any necessary angular position. Further, the improved ring structure co-operating with the sleeve through its spherical end serves to hold
5 the shaft a in proper alignment and, since the universal joint is disposed at the center of the spherical portions to keep the universal joint properly centered. By means of the collar g and the thrust bearing h the
10 universal joint is completely relieved of axial thrusts impressed upon the propeller shaft which are instead transmitted directly to the transmission casing.

Nothing which has been said in the foregoing specification is to be considered a limitation upon the scope of the invention except as indicated in the following claims.

What I claim is:

1. In combination with an automotive engine, a propeller and shaft for marine use
20 connected therewith, a sleeve through which the shaft extends from the engine casing, a spherical end on said sleeve, socket means carried with the casing to receive said spher-

ical end for angular adjustment of the shaft, 25 and a collar secured to the shaft in proximity to the outer end of the sleeve, said sleeve being adapted to resist axial thrust from the shaft.

2. In combination with an automotive engine, a propeller and shaft for marine use
30 connected therewith, said shaft being connected with the engine through a universal joint, a sleeve on the end of the shaft proximate the universal joint, a spherical end on
35 said sleeve, spherical rings bolted to the engine casing and receiving the spherical end of the sleeve, said universal joint being disposed at the center of the spherical portions, a collar secured to the shaft proximate the
40 outer end of the sleeve, and a thrust bearing between the collar and the sleeve, whereby axial thrusts impressed upon the shaft are transmitted to the casing.

This specification signed this 24th day of
45 May A. D. 1927.

MERRILL G. BARKER.