March 5, 1968 C. E. BLANCHARD, JR 3,371,720

FISH LINE CUTTER

Filed Aug. 25, 1966

Fig. 2

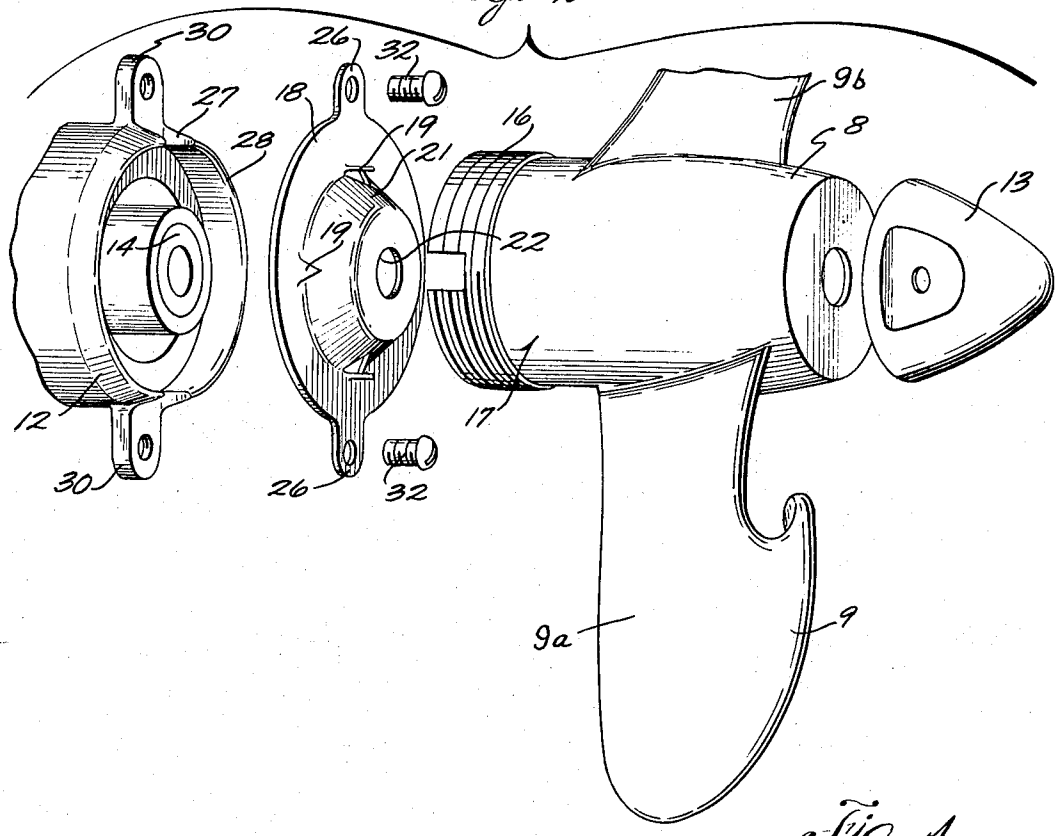



Fig. 1

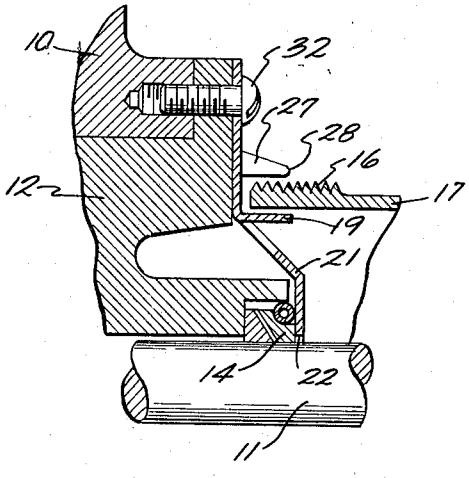
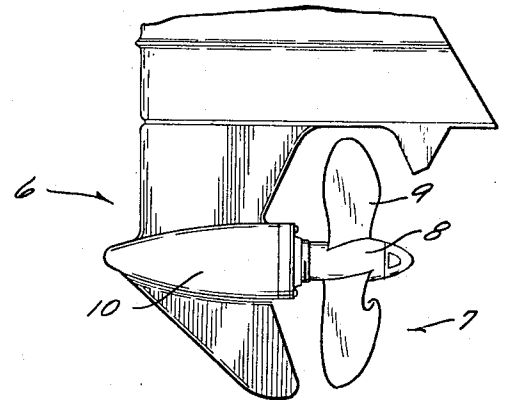



Fig. 3




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# FISH LINE CUTTER

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## ABSTRACT OF THE DISCLOSURE

Disclosed herein is the combination, in a marine propulsion device, of a lower unit having a gear case, a propeller shaft mounted in said gear case and extending rearwardly therefrom and a propeller having a blade and a propeller hub supporting said blade and mounted on said shaft rearwardly of the gear case. The propeller hub has an outer face provided with a screw thread located between the blade and the gear case and having a pitch extending in the same general direction as the pitch of the propeller blade. In addition, cutting means are located between the lower unit and the propeller hub and mounted to the lower unit.

The present invention relates to lower units having marine propeller hub assemblies and more particularly, to fish line protectors therefor.

The present invention provides protection of the lower unit of a marine propulsion device from damage caused by fish line entanglement by a fish line repelling and cutting arrangement.

The fish line repeller comprises a raised screw thread on the outer face of a forwardly located generally cylindrical portion of a marine propeller hub, which thread has a pitch extending in the same general direction as the pitch of the propeller hub. A fish line engaging the threaded portion of the rotating hub is repelled rearwardly from the gear case by the rotating thread, thereby avoiding winding or wrapping of the line around the propeller shaft between the lower unit gear case and propeller, which winding or wrapping can cause extensive damage to the oil seal and eventual damage to the gear case and gears.

Further protection of the gear case is afforded by a fish line shear or cutter located between the gear case and propeller hub for severing any fish line which is not repelled by the thread and reaches this location, as for example, when a fish line engages the thread during reverse rotation of the propeller for rearward movement of a boat hull.

Other objects, advantages, and features of the invention will become apparent from the following description and accompanying drawings in which:

FIGURE 1 is a side elevational view of a marine propulsion device comprising a lower unit which includes a propeller hub assembly and which embodies various of the features of the invention.

FIGURE 2 is an exploded view of the propeller hub assembly shown in FIGURE 1.

FIGURE 3 is an enlarged fragmentary sectional view of the hub assembly shown in FIGURE 2.

Referring now to the drawings, FIGURE 1 shows a marine propulsion lower unit **6** with a propeller **7** having a hub **8** and propeller blades **9**, each of said blades having a front face **9***a* and a rear face **9***b*.

The propeller **7** is driven by gears contained in a gear case **10** which forms a part of the lower unit **6**. The propeller **7** is mounted on a propeller shaft **11** which extends through the hub **8** and a bearing retainer **12**. The propeller **7** is secured to the shaft **11** by a cap **13**. Gear lubricants are sealed in the gear case by an oil seal **14** surrounding the shaft **11**.



Protection of the oil seal **14** and gear case **10** from damage caused by fish line entanglement and winding on the propeller shaft is provided by a raised screw thread or helical cam **16** located on the outer face **17** of a generally cylindrical portion of the propeller hub **8**, which portion is located forwardly of the front face **9***a* of the blades **9**. As shown in FIGS. 2 and 3, the thread comprises several complete turns and has a pitch with a direction which is effective to expell rearwardly a fish line during such rotation of the propeller shaft as is effective to obtain forward propulsion. Specifically the pitch of the screw thread extends generally in the same direction as the pitch of the propeller blades. For example, if the propeller hub rotates clockwise, as seen from the rear, to propel the boat hull forwardly the thread would be a right-hand or clockwise thread. Thus, the screw thread **16** tends to direct a fish line engaging the rotating screw thread rearwardly away from the oil seal **14** and gear case **10** when the propeller is rotating in the direction affording forward movement. The thread **16** is desirably raised above the face **17** to facilitate engagement with a fish line although some of the advantages of the invention can be obtained with a thread which is not so raised.

In the disclosed construction, the thread **16** commences at the forward end of the hub and extends to a point spaced between the forward end and the propeller blades **9**. If desired, the entire portion of the hub surface **17** between the forward end and the blades can be threaded to repel rearwardly a fish line.

The thread **16** may be cut from a raised portion of the hub face or formed in a hub casting process. Various alternate methods of providing a thread on the hub will be apparent to those working in the art, such as a helical coil or wire band on the hub face and welded or otherwise secured in place.

In the disclosed construction, cutting means are provided to cut or shear a fish line which reaches the location between the gear case and hub. Although various alternate cutter designs may be employed, in the disclosed construction the cutting means comprises a plate **18** provided with a plurality of triangular cutters **19** that can be stamped from the plate **18**.

As shown in FIGURE 3 the cutters **19** extend rearwardly and interiorly of the hub **11** to sever any fish line that reaches that location. To accommodate the rearwardly extending propeller bearing retainer **12** and oil seal **14**, plate **18** is provided with a frusto-conical shaped portion **21** having an aperture **22** for the propeller shaft **11**. In the disclosed construction, plate **18** is mounted to the lower unit by two ears **26** that fit in notches **27** in an annular lip **28** of the propeller bearing retainer **12**. The plate **18** is bolted through two ears **30** on the bearing retainer **12** to the gear case **10** by bolts **32**. Plate **18** also serves as a protective cover for the oil seal.

The cutting plate protects the oil seal and gear case when the propeller is reversed for rearward movement of a boat hull by cutting any fish line which becomes wound on the hub and enters into the annular space between the hub and the gear case.

Various of the features of the present invention are disclosed in the following claims.

What is claimed is:

**1.** In a marine propulsion device, the combination of a lower unit, a propeller shaft mounted in said lower unit, a propeller having a propeller hub mounted on said shaft and a propeller blade on said hub, said hub having an outer face provided with a screw thread having a pitch extending in the same general direction as the pitch of said propeller blade, and cutting means located between said lower unit and said propeller hub and mounted to said lower unit.

**2.** A marine propulsion device in accordance with

claim 1 wherein said thread is raised above said face of said hub.

3. A marine propulsion device in accordance with claim 1 wherein said thread commences at the forward end of said hub and extends rearwardly to a point remote from said forward end.

4. A marine propulsion device in accordance with claim 1 wherein said cutting means comprises a plate having at least one cutting portion.

5. A marine propulsion device in accordance with claim 1 wherein said cutting means comprises a plate secured to said lower unit and having a plurality of cutters integral with said plate and extending outwardly from said lower unit and interiorly from said propeller hub.

6. In a marine propulsion device, the combination of a lower unit having a gear case, a propeller shaft mounted in said gear case and extending rearwardly therefrom, and a propeller having a blade and a propeller hub supporting said blade and mounted on said shaft rearwardly of said gear case, said hub having an outer face provided with a screw thread located between said blade and said gear case and having a pitch extending in the same general direction as the pitch of said propeller blade.

7. In a marine propulsion device, the combination of a lower unit, a propeller shaft mounted on said lower unit, a propeller hub mounted on said shaft, and cutting means located between said lower unit and said propeller hub and mounted to said lower unit, said cutting means having at least one cutter extending interiorly of said propeller hub.

8. In a marine propulsion device, the combination of a lower unit, a propeller shaft mounted on said lower unit, a propeller hub mounted on said shaft, said hub having an outer face provided with a thread raised above said face, said thread running in the direction which is effective to rearwardly displace a fish line during propeller rotation which is effective to produce forward movement of a boat hull, said thread commencing at the forward end of said hub and extending rearwardly to a point remote from said forward end, and cutting means located between said lower unit and said propeller hub and mounted to said lower unit, said cutting means comprising a plate with a plurality of cutters integral with said plate and extending outwardly from said gear housing, and interiorly of said propeller hub.



9. A marine propulsion device in accordance with claim 6 wherein said screw thread is located on a generally cylindrical portion of said hub located between said gear case and said propeller blades.

10. A marine propulsion device in accordance with claim 6 wherein said screw thread includes a plurality of turns and extends rearwardly from adjacent the forward end of said propeller hub.

11. A marine propulsion device in accordance with claim 6 wherein said screw thread is disposed on a generally cylindrical portion of said hub extending rearwardly from the forward end of said hub and said screw thread includes a plurality of turns.


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