Dec. 6, 1960 D. A. FORTUNE 2,962,999

PROPELLER SHROUD

Filed Oct. 27, 1958

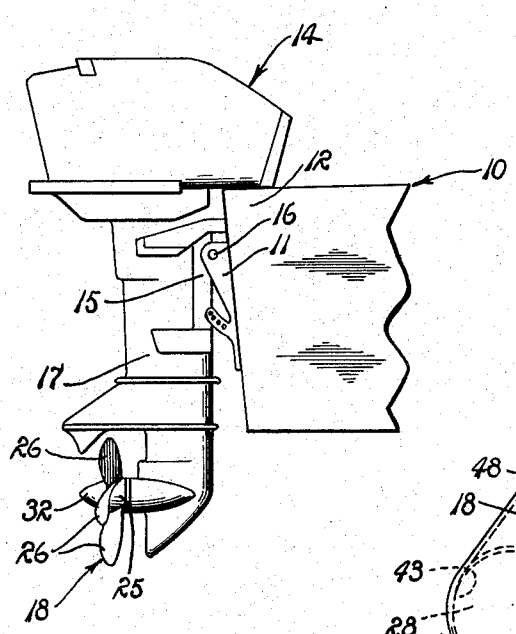


FIG. 1.

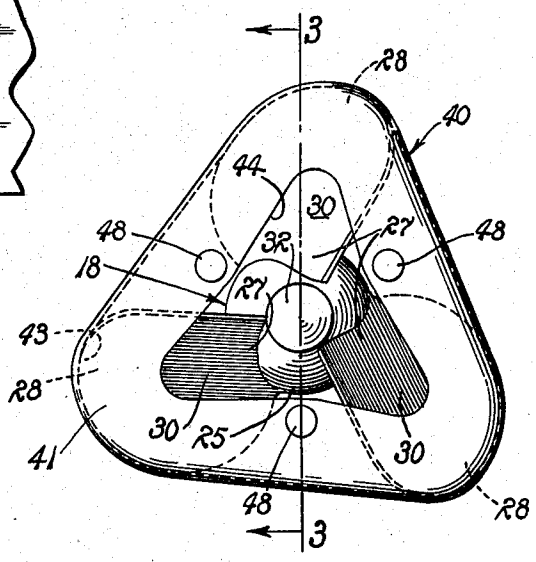


FIG. 2.

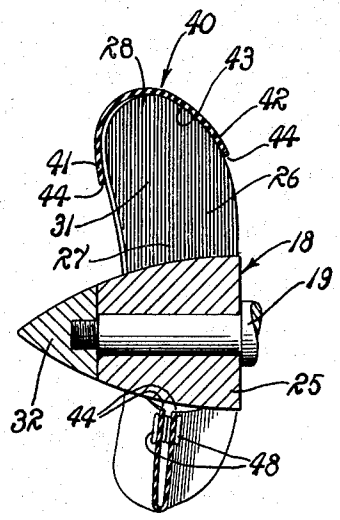


FIG. 3.

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2,962,999

Patented Dec. 6, 1960

2,962,999

PROPELLER SHROUD

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Filed Oct. 27, 1958, Ser. No. 769,690

8 Claims. (Cl. 115—18)

The present invention relates to a propeller shroud and more particularly to an envelope for reducing the efficiency of a propeller, as for example in reducing the minimum operable speed of a boat to less than it otherwise can attain.

The sport of motorboating generally involves two types of activities which usually cannot be achieved with a single boat. Racing, speedboating, and water skiing require high speed operation necessitating ample power, an efficient propeller and adequate propeller speed. Conversely, trolling requires very low operating speeds. Prior to the present invention, it was found that in the absence of expensive transmissions, speedboats could not reduce their operating speeds sufficiently to suit them for trolling purposes. As a result, the owners of speedboats who wished to troll either provided their boats with auxiliary trolling motors, or more frequently, utilized entirely separate boats for the purpose.

An object of the present invention is to provide an attachment whereby speedboats can readily be adapted for trolling.

Another object is to provide an efficiency reducing shroud for a propeller.

Another object is to cover the tips or outer end portions of the blades of a propeller so as to reduce the resistance to rotation and the effectiveness of the propeller in a fluid medium.

Another object is to provide an elastic annular shroud or envelope adapted to circumscribe a propeller in releasably fitted relation on the blades of the propeller.

Another object is to enable the use of the same motor on a boat for high speed and low speed operations.

Another object is to enable a motorboat to be used for water skiing and fishing without changing the motor or propeller thereof.

Other objects are to provide a cover or envelope of the type described which is simple and economical to construct and use, dependable in action, durable, adapted for use with motors and propellers of various sizes and types, and one which is easy to attach and remove.

These, together with other objects and advantages, will become more fully apparent upon reference to the following description.

In the drawing:

Fig. 1 is a fragmentary side elevation of a motorboat and of a motor mounted on the stern of the boat.

Fig. 2 is a somewhat enlarged rear elevation of the propeller of the motor of Fig. 1 and of the shroud of the present invention applied to the propeller.

Fig. 3 is a diametric section taken on line 3—3 of Fig. 2.

Referring more particularly to the drawing, a boat is partially shown in Fig. 1 and indicated by the numeral **10**. A motor support bracket **11** is mounted on the stern **12** of the boat, and an outboard motor **14** provides a hanging bracket **15** supported on the bracket **11** and is pivotally movable about a substantially horizontal axis defined by a pivot pin **16**. The motor provides a housing **17** which is

upright when the motor is in operating position and a propeller **18** connected to a propeller shaft **19**, all as is well-known. While the instant invention is illustrated in connection with the outboard motor shown, it will be apparent that it is as suitably employed with any other motor desired.

The propeller **18**, as is best illustrated in Figs. 2 and 3, includes a hub **25** rigidly connected to the propeller shaft **19** and a plurality of blades **26** rigidly outwardly extended from the hub in equally angularly spaced relation. The blades have inner end portions or roots **27** and outer end portions or tips **28**. Further, the blades provide aft surfaces **30** and forward surfaces **31**. A propeller nut **32** is connected to the propeller shaft for holding the hub in fixed position on the shaft. The motor **14** is adapted for pivotal movement between the upright operating position of Fig. 1 wherein the propeller blades **26** are immersed in water, and a nonoperating position with the housing **17** substantially horizontally outwardly extended from the stern **12** of the boat **10**.

The subject invention is embodied in an annular elastic, flexible shroud or envelope **40**, preferably of sheet rubber, or elastic flexible sheet plastic, and provides opposed rear and front walls **41** and **42**, respectively, integrally interconnected and defining therewithin an annular concavity **43**. The front and rear walls have inner annular edges **44** which cirumscribe a central opening in the envelope. A plurality of snap fasteners **48** are mounted in the front and rear walls of the envelope in circumferentially spaced positions therearound cooperatively to interconnect the front and rear walls intermediate the blades. The designation of the walls as being front and rear is only for descriptive convenience and is not intended to limit positioning of the envelope which will be seen to be reversible.

When the envelope **40** is relaxed, that is, not stretched, it is of approximately circular shape having a radius generally corresponding to, but slightly less than, the radial distance between the axis of the propeller **18** and the terminal edge of each of the blades **26**.

Operation

The operation and use of the described embodiments of the subject invention is believed to be readily apparent and is briefly summarized at this point.

When the boat **10** is used for towing water skiers, or for high speed pleasure operation, for example, the motor **14** is employed without the shroud **40** and is operated in the usual manner to propel the boat at high speeds through the water.

However, if it is desired to use the boat **10** for trolling for fish, it is necessary to motivate the boat at a very slow speed. Accordingly, the shroud **40** is stretched over the propeller **18** in circumscribing relation thereto and so that the blades **26** fit into the concavity **43**. The front and rear walls **42** and **41** of the shroud are disposed generally against the front and rear surfaces **31** and **30**, respectively, of the blades. Since the blades are longitudinally helical and since the shroud is tensioned between the blades, the walls of the shroud are not entirely flush against the blade surfaces. However, it is to be noted that the envelope only covers the outer end portions of the tips **28** of the blades and leaves exposed the inner end portions **27** as well as the propeller shaft **19** and nut **32**.

Normally, as suggested above, the elasticity of the shroud **40** tensions it between the blades **26** so as to hold it dependably in position. However, the snap fasteners **48** are provided for connecting the front and rear walls **42** and **41** of the shroud between the blades **26**. This holds the shroud walls closer to the blade surfaces and insures more dependable retention of the shroud on the propeller **18** during movement through the water.

Thus, for trolling, with the shroud **40** on the propeller

18, the motor 14 is operated in the normal manner to rotate the propeller in the water. Since the outer end portions 28 of the blades 26 are covered, their propelling effectiveness is negligible. The shroud actually reduces resistance to rotation of the blades in the water and thus in certain instances reduces fuel consumption. However, since the inner end portions 27 of the blades are still exposed, the propeller does have some propelling effect to motivate the boat 10 through the water. The speed at which the boat is traveled is considerably reduced. It is to be noted that the size of the opening 46 is selected so as to expose the desired amount of the blades 26 to achieve the desired minimum speed of travel of the boat. It will be evident that the size of the shroud 40 and its central opening 46 must be related to the size of the propeller in calculating such desired minimum speed.

From the foregoing, it will be apparent that a simple and economical device has been provided whereby a motorboat can be quickly and easily modified to travel at speeds appreciably less than their previous minimums. Whether the boat is an outboard of the type illustrated or an inboard, the shroud of the present invention can quickly and easily be installed by stretching the same over the propeller blades. As stated, the normal tension of the shroud holds it in place on the propeller and the snaps 48 need not be utilized unless desired. However, if there are moments during which the propeller may be operated at relatively high speeds so that the centrifugal force has a tendency to throw the shroud from the blades, the snaps are advantageous. The shroud of the present invention has made it possible for the owners of speedboats to enjoy trolling without the requirement of an auxiliary motor or a second boat.

Although the invention has been herein shown and described in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices and apparatus.

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

1. A shroud for reducing the efficiency of a propeller having a plurality of radially extended blades, as for adapting a motorboat for trolling which otherwise has a minimum operating speed too great for the purpose, comprising an annular elastic envelope adapted for tensioning in circumscribing relation about the blades of such a propeller and including annular opposed walls having interconnected peripheral portions and providing aligned central openings adapted to accommodate flow of water therethrough when the envelope is applied to the propeller and such propeller is operating in water.

2. A shroud for reducing the efficiency of the propeller of a motorboat which has a hub and a plurality of radially extended circumferentially spaced blades and a normal path of water motivation substantially axially of the propeller through the spaces between the blades comprising an annular elastic envelope adapted for tensioning in circumscribing relation about such blades in obstructing relation to the path of water motivation, said envelope including fore and aft walls having concentric aligned hub receiving openings therein.

3. The combination of a propeller for a motor adapted for use in propelling a boat through the water, which propeller provides a plurality of blades having outwardly extended end portions, and an annular elastic envelope circumscribing the propeller and providing a concavity receiving the outwardly extended end portions of the blades, the envelope conforming to portions of the blades and partially covering the blades for reducing the propelling efficiency of the propeller in the water.

4. In combination with a motor having a propeller providing a plurality of blades radiating outwardly from a shaft and adapted for use on a boat for propelling the boat through the water at relatively high speeds, the blades having inner and outer end portions and fore and aft surfaces, means for reducing the efficiency of the propeller in the water to enable motivation of the boat through the water at speeds substantially less than the minimum speed otherwise attainable with said motor and propeller comprising an annular elastic flexible envelope including a pair of opposed integrally interconnected annular side walls providing a concavity therewithin opening inwardly of the envelope toward a central opening thereof circumscribed by inner edges of the walls, the envelope being releasably stretched over the blades of the propeller in circumscribing relation therearound, with the fore and aft surfaces of the outer end portions of the blades being overlaid by the walls of the envelope, and with the inner portions of the blades being exposed within the central opening in the envelope whereby the efficiency of the propeller is reduced by the envelope to reduce the minimum operable speed of the boat.

5. The combination of a propeller for a motor adapted for use in propelling a boat through the water, which propeller provides a plurality of blades having outwardly extended end portions, and an annular envelope of elastic sheet material tensioned about the blades of the propeller and providing a concavity receiving the outwardly extended end portions of the blades thereby partially covering the blades for reducing the propelling efficiency of the propeller in the water.

6. The combination of a propeller for a motor adapted for use in propelling a boat through the water, which propeller provides a plurality of blades having outwardly extended end portions, an annular envelope circumscribing the propeller and providing a concavity receiving the outwardly extended end portions of the blades thereby partially covering the blades for reducing the propelling efficiency of the propeller in the water, the blades being in angularly spaced relation to each other, the envelope being elastic and stretched over and between adjacent blades, the envelope also including opposed side walls overlying opposite surfaces of the blades, and means provided on the side walls for interconnecting the same between adjacent blades.

7. The combination of claim 6 wherein said means are snap fasteners.

8. In combination with a motor having a propeller providing a plurality of blades radiating outwardly from a shaft and adapted for use on a boat for propelling the boat through the water at relatively high speeds, the blades having inner and outer end portions and fore and aft surfaces, means for reducing the efficiency of the propeller in the water to enable motivation of the boat through the water at speeds substantially less than the minimum speed otherwise attainable with said motor and propeller comprising an annular elastic flexible envelope including a pair of opposed integrally interconnected annular side walls providing a concavity therewithin opening inwardly of the envelope toward a central opening thereof circumscribed by inner edges of the walls, the envelope being releasably stretched over the blades of the propeller with the fore and aft surfaces of the blades being overlaid by the walls of the envelope whereby the efficiency of the propeller is reduced by the envelope to reduce the minimum operable speed of the boat.

References Cited in the file of this patent

UNITED STATES PATENTS

1,986,867	Walsh	Jan. 8, 1935
2,396,340	Paulson	Mar. 12, 1946
2,460,237	Palmer	Jan. 25, 1949