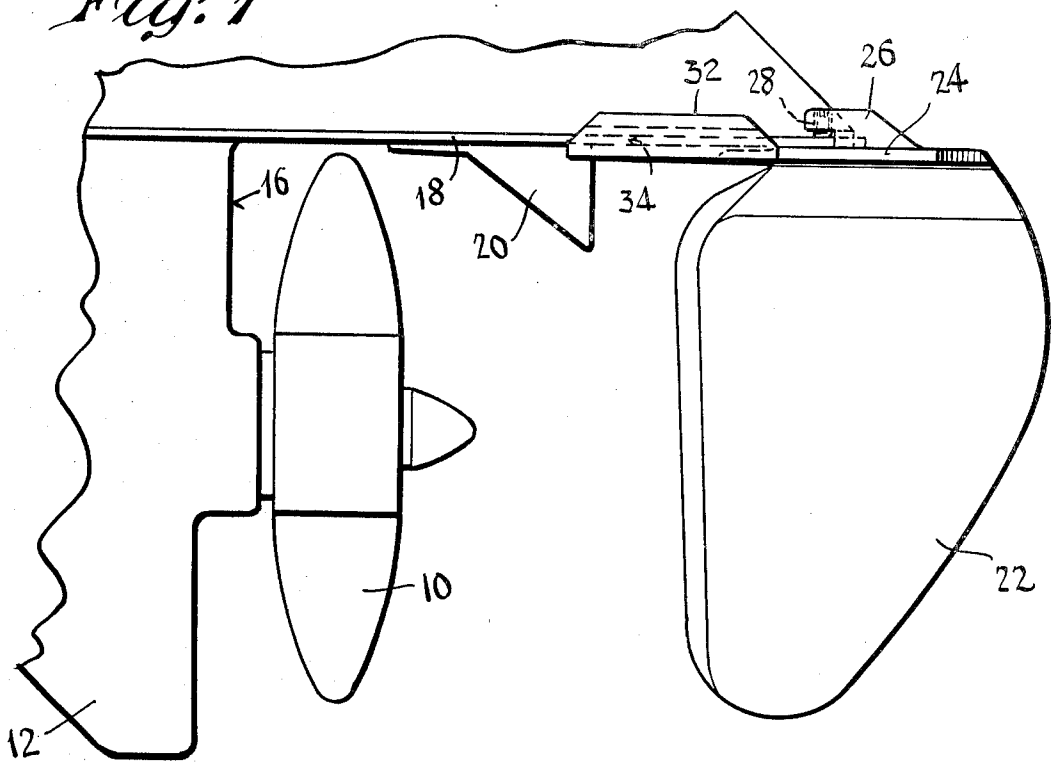
June 23, 1970 D. F. LINSLEY 3,516,378

RUDDER ATTACHMENT FOR OUTBOARD MARINE DRIVES

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Fig. 1



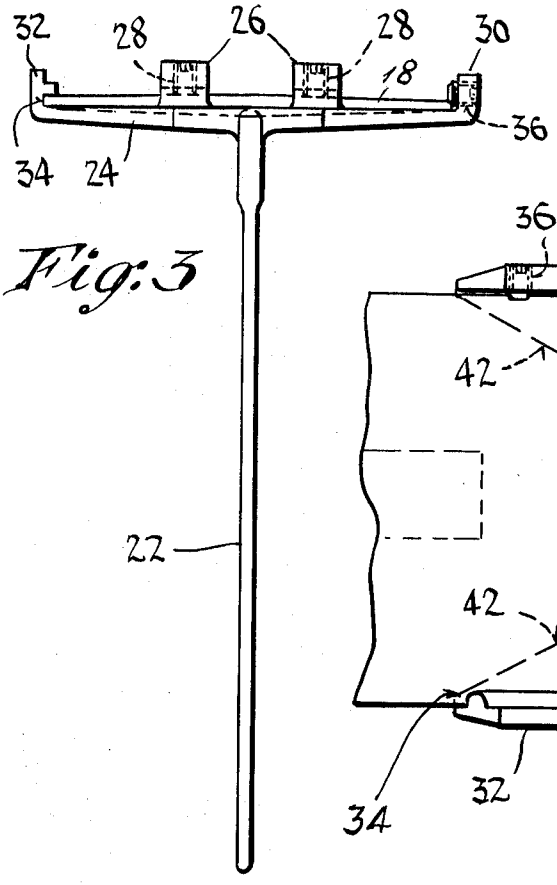


Fig. 3

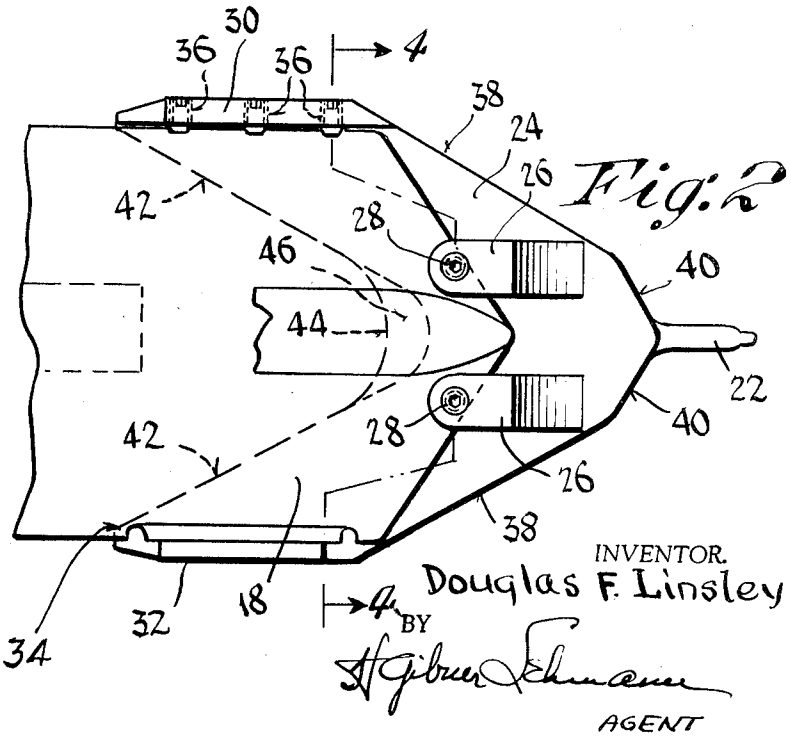


Fig. 2

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Fig. 4

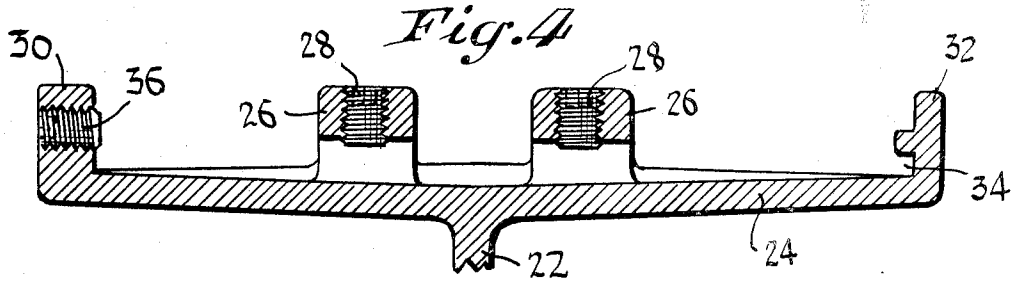


Fig. 5

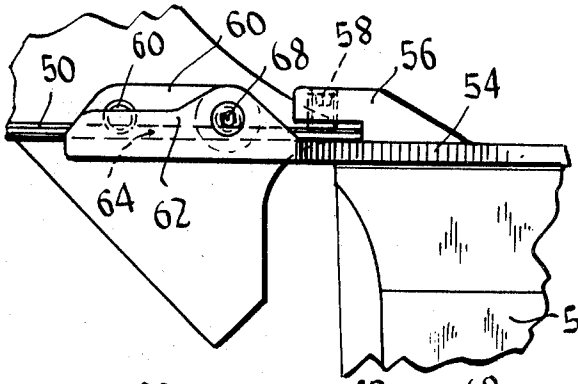
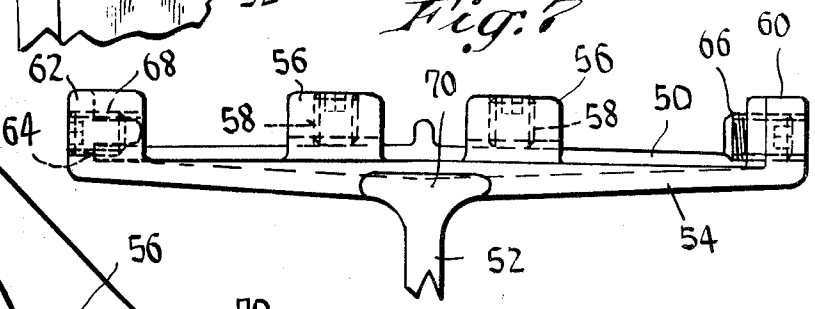


Fig. 7



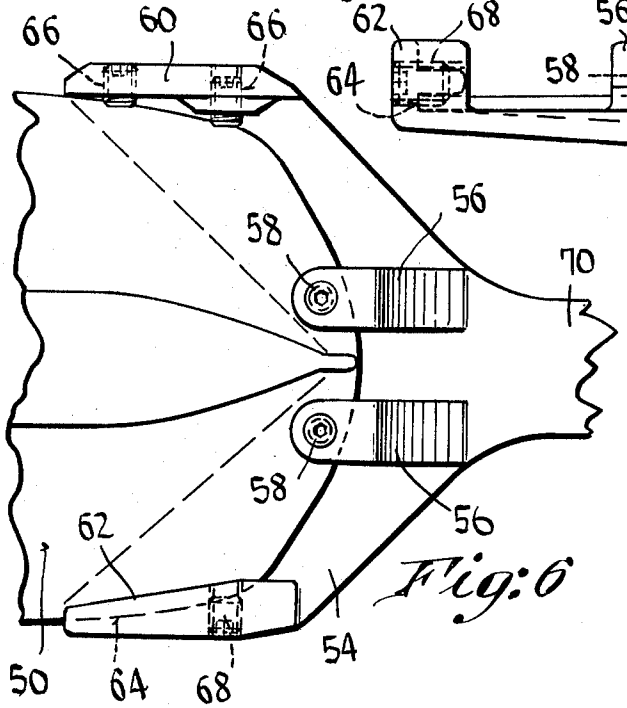
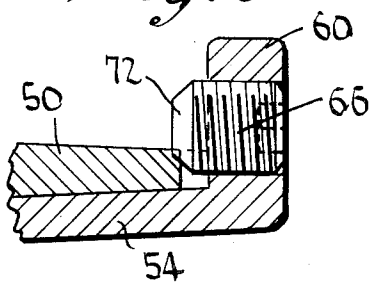


Fig. 6

Fig. 8



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RUDDER ATTACHMENT FOR OUTBOARD MARINE DRIVES

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Int. Cl. B63h 21/26, 25/42
U.S. Cl. 114—165 9 Claims

ABSTRACT OF THE DISCLOSURE

A rudder attachment for outboard marine drives of either outboard or inboard engines, comprising a cast rudder blade having an upper flat-surfaced base portion disposed at right angles to the blade and adapted to fit flat against the horizontal cavitation plate of the marine drive. The base portion has clamp fingers spaced from its flat surface and provided with set screws for clamping the rear edge portion of the cavitation plate, and additionally has side ledges and set screws therein, for clamping side edge portions of the cavitation plate whereby the rudder blade is rigidly clamped and affixed thereto.

Cross references to related applications

Application of Douglas F. Linsley filed Aug. 23, 1967, Ser. No. 662,609 and entitled "Rubber Attachment for Outboard Marine Drives."

Background

This invention relates to rudder attachments for outboard marine drives of outboard or inboard engines, and more particularly to attachments of this type which can be quickly installed on the cavitation plate of the engine with a minimum of tools and difficulty.

In some prior rudder attachments it was necessary to drill holes through the existing structures to effect the installation. In other attachments of the kind referred to a clamping action was utilized to effect the attachment. The prior devices had drawbacks in that the installation required machining procedures and quite considerable mechanical skill, or else the devices themselves were large and cumbersome, as well as not sufficiently universal so as to fit various existing structures and sufficiently sturdy to withstand successfully all the various conditions of use encountered in boating. In some cases as well, there was the likelihood of damaging the housing or adjoining structures of the drive being worked on or weakening the same, or else failing to provide added strength and reinforcement where the opportunity afforded this.

Summary

The present invention obviates the above drawbacks of prior attachments for outboard drives of outboard or inboard engines, and one object of the invention is to provide a novel and improved rudder attachment which does not require drilling or machining operations but instead enables a tight and secure failure-proof clamping mounting of the rudder blade to be effected to the existing cavitation plate with the use of but small and compact components which are not likely to fail or to damage existing engine structures.

This is accomplished by the provision of a novel structure comprising a rudder blade having a plurality of clamping devices which act in different directions on the aft portions of the lower fin-like housing, generally called the cavitation plate, of the drive. One clamping device acts vertically against the top and bottom surfaces of the cavitation plate, and another clamping device acts horizontally against opposite side edges of the plate. In conjunction with each other the clamping devices constitute

a very secure and reliable mounting for the rudder to the rear of the cavitation plate, yet one which enables the installer to easily and quickly attach the rudder to any of a variety of different models and makes of marine engine units.

Other objects and advantages of the invention are to provide an improved clamp-on rudder attachment in accordance with the foregoing, which can be clamped directly onto the cavitation plate of the drive housing and provide for its protection and reinforcement; to provide an improved clamping-type attachment which has great strength, resistance to corrosion, which is especially simple, low in cost of components, and is inexpensive to tool and produce.

Other features and advantages will hereinafter appear.

In the drawings:

FIG. 1 is a side elevational view of the improved clamp-on rudder attachment of the invention, mounted on the lower housing or cavitation plate portion of an outboard drive.

FIG. 2 is a top plan view of the rudder attachment of FIG. 1.

FIG. 3 is a rear elevational view of the rudder attachment.

FIG. 4 is a fragmentary sectional view, taken on the line 4—4 of FIG. 2.

FIG. 5 is a fragmentary side elevational view of a clamp-on rudder attachment illustrating another form of the invention.

FIG. 6 is a fragmentary top plan view of the rudder attachment of FIG. 5.

FIG. 7 is a fragmentary rear elevational view of the rudder attachment of FIGS. 5 and 6.

FIG. 8 is a detail showing engagement between a clamping screw and edge portion of the cavitation plate.

Considering first FIGS. 1 and 2, there is illustrated a lower portion of an outboard drive of either an outboard engine or an inboard engine, comprising a propeller **10** having a bearing in a lower housing **12** of fin-like configuration, said housing including an aft portion or edge **16**. The lower housing portion **12** also includes a horizontal cavitation plate **18** shown as having a rear pointed configuration in top plan, as seen in FIG. 2. The drive housing **12** also includes an exhaust duct **20** of usual type.

In accordance with the present invention there is provided an improved, clamping-type rudder attachment for the drive structure illustrated in FIGS. 1 and 2, which attachment is relatively small and compact, comprising a rudder blade **22** depending from a plate-like mounting or base portion **24**, the latter being adapted to engage and clamp to the rear of the cavitation plate **18**. The base portion **24** has a pair of clamping devices which act in different directions, namely a generally vertical direction and a generally horizontal direction, on the cavitation plate **18**.

The vertically acting clamping device comprises a pair of upstanding, overhanging lugs **26** on the base plate **24**, said lugs having set screws **28** disposed in their terminal portions which are spaced above the base plate. Between such terminal portions of the lugs **26** and the base plate **24** there is received the rearmost, pointed portion of the cavitation plate **18** whereby the latter can be securely clamped to the mounting plate **24** by tightening the screws **28**. Preferably the set screws **28** have cup points adapting them to slightly dig into the upper surface of the cavitation plate **18** to prevent any slippage after the screws are tightened.

The horizontally acting clamping device comprises shoulder members or ledges **30**, **32** which are spaced apart horizontally as shown in FIGS. 2 and 3 and ar-

ranged to extend alongside the rear, side-edge portions of the cavitation plate **18**. The shoulder member or ledge **32** has a groove **34** adapted to receive one side edge of the cavitation plate, and the ledge **30** is provided with set screws **36** adapted to engage the opposite side edge portion of the plate. When the set screws **36** are tightened against the edge of the cavitation plate, it will effect a secure clamping of such plate between the horizontal clamping ledges **30, 32**.

Preferably, as illustrated, the rudder attachment comprising the blade **22**, mounting or base plate **24**, lugs **26** and clamping ledges **30, 32** are all integral with each other, being formed as a metal casting of aluminum.

The securement of the rudder attachment to the cavitation plate is easily and quickly effected. The attachment is merely held in place in the position illustrated in FIGS. 1 and 2, and the vertically acting set screws **28** are tightened against the upper surface of the cavitation plate. Thereafter, the horizontally acting set screws **36** are tightened, whereupon the attachment is securely mounted in the proper position.

Referring to FIG. 2, the base or mounting plate **24** may be roughly in the shape of the letter V, having angularly disposed outer edges **38, 40**, and inwardly disposed angular edges **42**, the latter being joined by a centrally located curved edge **44**. A crescent-shaped depression **46** may be provided in the upper surface of the base plate **24** for purposes of clearance, in order to accommodate a variety of different cavitation plate configurations.

I have found that the combination of the vertically acting clamping device comprising the lugs **26** and screws **28**, and the horizontally acting clamping device comprising the ledges **30, 32** and screws **36** provide a streamlined, extremely sturdy and reliable mounting for the rudder blade **22** on the cavitation plate **18**, and one which has the additional advantage that it can accommodate slight variations in the sizes and thicknesses of different cavitation plates, all while enabling a very rapid and easy installation of the rudder attachment to be effected. Very little resistance is offered to the water flow, with a minimum of eddy currents.

Another embodiment of the invention is illustrated in FIGS. 5, 6 and 7. This embodiment is adapted to accommodate cavitation plates which have a rounded configuration at their rear portions. Such a rounded cavitation plate is indicated at **50** in FIGS. 5 and 6. The rudder attachment comprises a rudder blade **52** carried by and depending from a base or mounting plate portion **54** having upstanding, overhanging clamping lugs **56** provided with vertically acting set screws **58**. The base plate **54** has upstanding side shoulder members or ledges **60, 62**, the ledge **62** having a groove **64** to accommodate a side edge portion of the cavitation plate **50**. The clamping member or lug **60** is provided with a pair of horizontally acting set screws **66** adapted to engage an opposite side edge portion of the cavitation plate **50**, and the clamping member or ledge **62** has a single set screw **68** for clamping the edge portion which is accommodated in the groove **64**.

The mounting or base plate **54** includes a relatively narrow rearward extension **70** disposed along the top edge of the rudder blade **72**, said extension constituting in effect a continuation of the existing cavitation plate **50** of the engine.

The mounting of the rudder attachment illustrated in FIGS. 5, 6 and 7 is similar to that already set forth above. The attachment is first positioned against the cavitation plate in the manner illustrated, whereupon the vertically acting set screws **58** are tightened. Thereafter, the horizontally acting set screws **66** and **68** are tightened. Preferably, as already stated above, the clamping set screws are of the cup-point type, and are arranged so that the sloping surface of the point, indicated in FIG. 8 at **72**, engages a corner of the side edge portion of the cavitation plate. By such arrangement a wedging action takes place, whereby the set screw tends to wedge the cavitation plate tightly against the base or mounting plate of the attachment. This arrangement tends to prevent loosening of the set screws, and also results in an extremely sturdy and rigid mounting of the base plate on the cavitation plate.

It will now be seen from the foregoing that I have provided a novel and improved rudder attachment for use with marine engines of both the outboard and inboard type, in conjunction with the exterior drive housings of such engines. The rudder attachment is intended for securement to the cavitation plate of the drive housing, and may be very easily and quickly installed, without requiring any special skills or know-how. The installer, using a simple Allen wrench for tightening the set screws and referring to a simple installation diagram, can readily mount the attachment in the desired, proper position. The attachment, when cast in aluminum, is of light weight, and is seen to be especially compact, involving the fewest number of separate parts. In addition to the metal casting, there are only the clamping set screws constituting the rudder attachment. For both of the illustrated forms of the invention, the rudder attachment has been found to remain securely in place once it is mounted, and will greatly facilitate the steering and maneuvering of marine craft on which it is installed.

Variations and modifications are possible, and portions of the improvement may be used without others.

I claim:

1. A clamping-type rudder attachment for an outboard marine drive housing of the type having a horizontal cavitation plate, comprising in combination:

(a) a rudder blade, wherein the improvement comprises:

(b) a pair of clamp devices carried by the rudder blade and acting in two different directions substantially at right angles to each other,

(c) one of said clamp devices comprising a pair of relatively widely horizontally spaced members disposed in a horizontal plane at opposite sides of and symmetrically with respect to the rudder blade and adapted to extend alongside opposite side edge portions of the cavitation plate at the rear thereof,

(d) said one clamp device including a set screw engageable with at least one side edge portion of said plate,

(e) the other of said clamp devices comprising relatively closely, vertically spaced members adapted to be disposed respectively above and below the rear portion of the cavitation plate,

(f) said other clamp device including a set screw engageable with a horizontal surface of said plate.

2. An attachment as in claim **1**, wherein:

(a) one of said horizontally spaced members has a groove adapted to receive a side edge portion of the cavitation plate.

3. An attachment as in claim **1**, wherein:

(a) the set screw of said one clamp device has a tapered tip adapted to engage and wedge said side edge portion of the cavitation plate against an adjoining surface of the clamp device.

4. An attachment as in claim **1**, wherein:

(a) the pair of clamp devices comprise portions of a common mounting base member attached to the rudder blade.

5. An attachment as in claim **4**, wherein:

(a) the mounting base member comprises a flat plate engageable with a horizontal surface of the cavitation plate.

6. An attachment as in claim **5**, wherein:

(a) the mounting base plate has a V-shaped configuration.

7. An attachment as in claim 5, wherein:
(a) one member of said other clamp device comprises an upstanding overhanging lug on said base plate in which the set screw is carried.
8. An attachment as in claim 5, wherein:
(a) said other clamp device comprises said base plate and a pair of upstanding overhanging lugs thereon,
(b) said lugs having set screws engageable with said cavitation plate.
9. An attachment as in claim 8, wherein:
(a) said rudder plate, base plate, and said clamping members are constituted as a single metal casting.

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U.S. Cl. X.R.

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