Feb. 13, 1968 C. E. MACDONALD ETAL 3,368,516

THROUGH-TRANSOM MARINE PROPULSION UNIT

Original Filed July 7, 1958 2 Sheets-Sheet 1

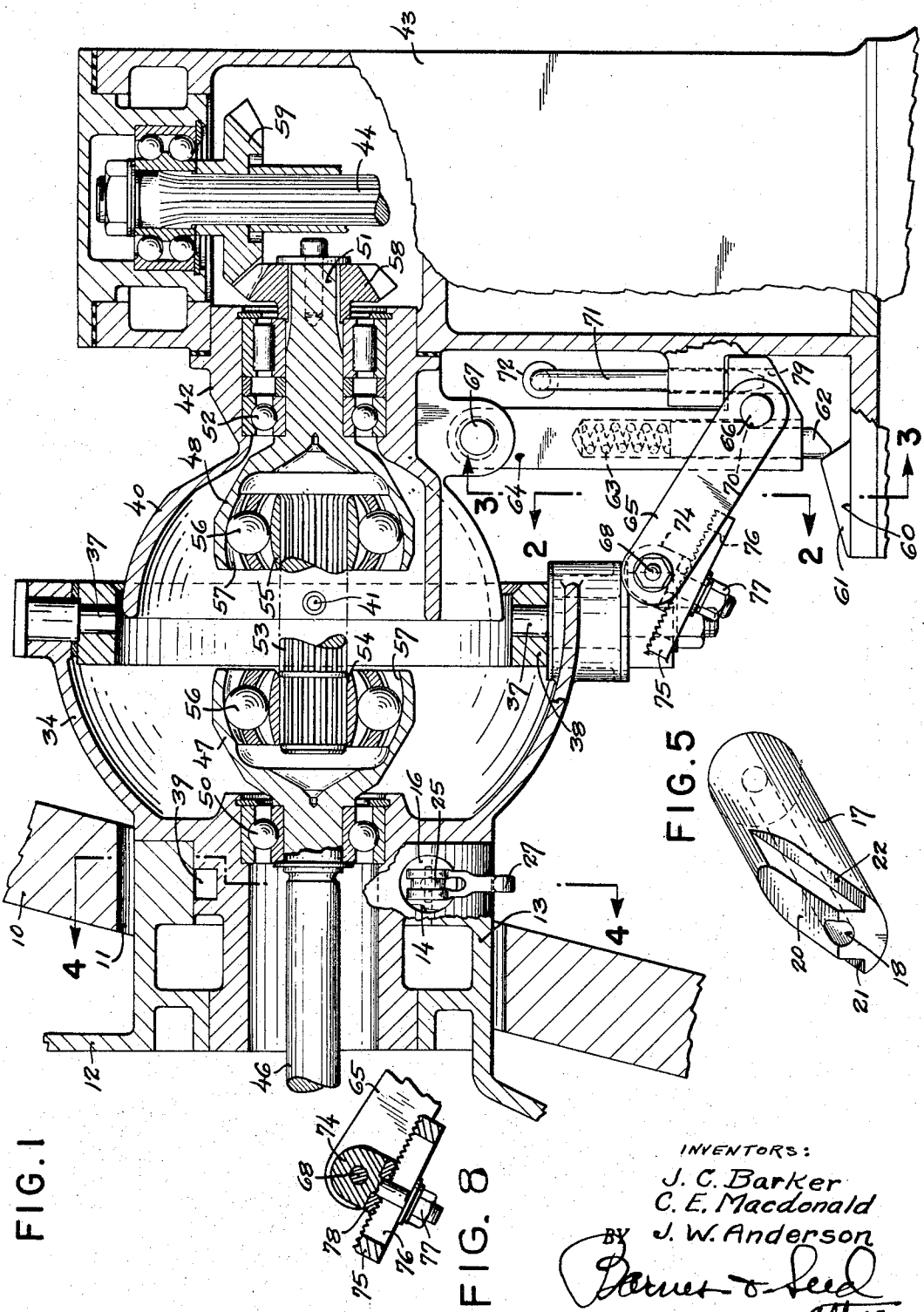


FIG. 1

FIG. 5

FIG. 8

INVENTORS:
J. C. Barker
C. E. Macdonald
J. W. Anderson
BY
Barnes & Reed
attys.

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FIG. 2

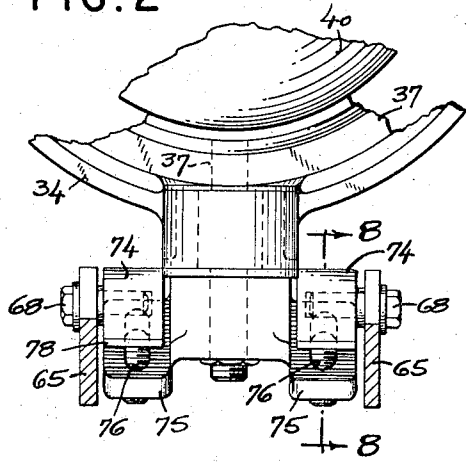


FIG. 3

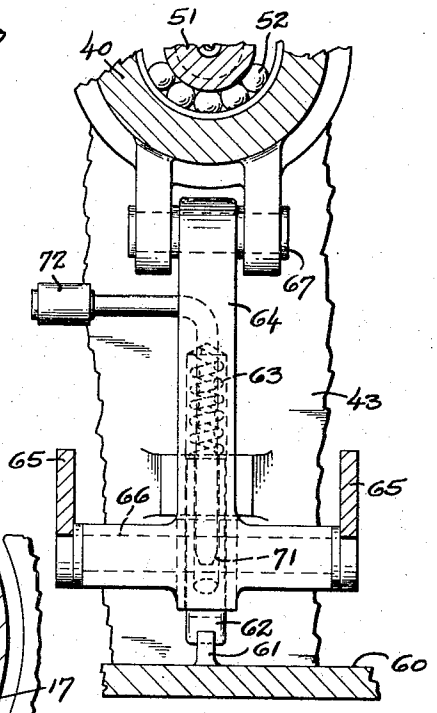


FIG. 4

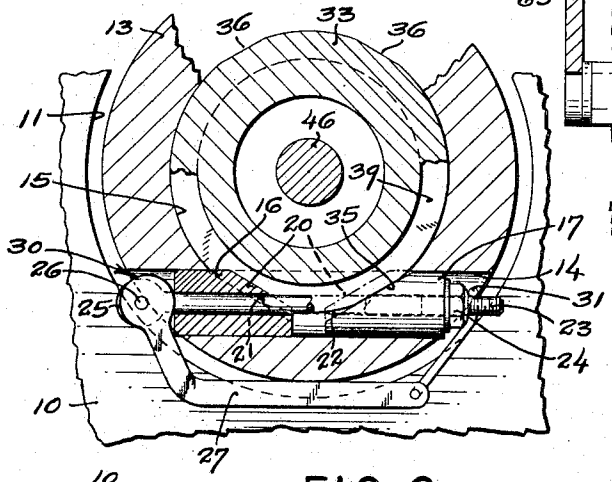


FIG. 6

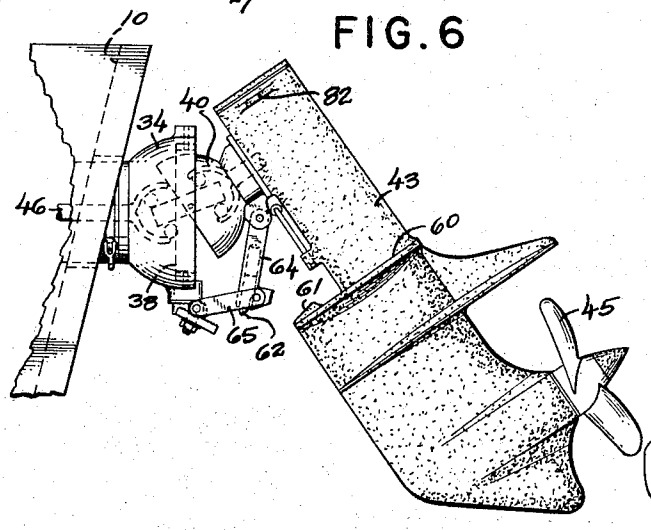
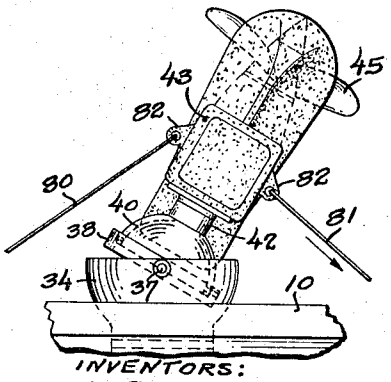


FIG. 7



INVENTORS:
J. C. Barker
C. E. Macdonald
BY J. W. Anderson
Barnes & Reed
attys.

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3,368,516
THROUGH-TRANSOM MARINE PROPULSION UNIT

Charles E. MacDonald, Hoquiam, and John W. Anderson and Jerry C. Barker, Seattle, Wash., assignors, by mesne assignments, to Eaton Yale & Towne, Inc., a corporation of Ohio

Continuation of application Ser. No. 746,920, July 7, 1958. This application May 15, 1961, Ser. No. 112,163
18 Claims. (Cl. 115—35)

This is a continuation of U.S. patent application Ser. No. 746,920 filed July 7, 1958, titled Improved Through-Transom Marine Propulsion Unit, now abandoned.

This invention relates to that type of marine propulsion unit combining features both of an inboard and outboard motor, and one, more especially, having an engine permanently installed within the boat and passing its drive along an approximate horizontal axis through an opening in the transom to the head end of a power leg occupying an outboard position, the power leg passing the drive downwardly to a propeller shaft carried on the lower end of the leg. While there are various terms used in the trade to describe this type of drive, "through-transom" is perhaps the most commonly used.

It is the principal object of the present invention to devise a through-transom boat drive providing means by which engagement of the underwater portion of the power leg with any obstruction the resistant force of which would be apt to damage the leg causes such leg to swing upwardly into the clear.

Other objects and advantages looking to the general perfection of a through-transom drive will, with the foregoing, appear and be understood in the course of the following description and claims, the invention consisting in the novel construction and in the adaptation and combination of parts hereinafter described and claimed.

In the accompanying drawings:

FIGURE 1 is a fragmentary longitudinal vertical sectional view illustrating a through-transom drive constructed to embody the preferred teachings of the present invention.

FIG. 2 is a fragmentary transverse vertical sectional view taken on line 2—2 of FIG. 1.

FIG. 3 is a fragmentary transverse vertical sectional view drawn on line 3—3 of FIG. 1.

FIG. 4 is a fragmentary transverse vertical sectional view drawn on line 4—4 of FIG. 1.

FIG. 5 is a perspective view drawn to an enlarged scale to portray one of two paired slugs employed as a key to releasably couple the outboard and inboard portions together, and also to locate the power leg selectively in either an operative or an inoperative position.

FIG. 6 is a fragmentary side elevational view showing the power leg as it appears when the same swings upwardly to clear an obstruction, the scale being reduced from that of the preceding views; and

FIG. 7 is a fragmentary top plan view representing the manner in which the power leg of the present structure swings laterally for steering purposes.

With reference being had to said drawings, the numeral **10** designates the transom, transom wall, or stern closure means of a boat or walled vessel. A circular opening **11** is provided therein, located well above the water-line. A power plant (not shown) is mounted inboard to the immediate front of said transom with its drive shaft pointing rearwardly in centered, or approximately center relation, to the opening **11**, the mounting being permanent on a suitable bed. A clutch housing **12** is fixed to the engine block and provided thereby is a center-bored tail-piece or hollow forward drive support housing **13** which extends into and moderately beyond the transom opening

to serve as a drive support. Adjacent its rear so as to be exposed to the rear of the transom this tail-piece has a transverse horizontal cross-bore **14** so located as to traverse the bottom portion of the longitudinal center-bore **15**. A pair of locking slugs **16** and **17** are inserted from opposite ends in this cross-bore. Each such slug (see FIG. 5) is substantially cylindrical in shape and has a center-bore **18**. Upon its inner end each slug presents a bias-cut rib **20** which is disposed central to the width of the slug and has two bias-cut flats **21** and **22** located at opposite sides thereof in a common plane stepped below said central rib. A pin **23** is received through the center-bores of the two slugs and is threaded upon one end for reception of a nut **24**. Upon the other end is a head **25** drilled transversely to receive a pintle **26** serving as the fulcrum for a bell-crank toe lever **27**. The camming toe of this lever is forked and is designated by **30**, with the arrangement one in which the high side of the cam presses the slugs directively toward one another when the arm of the lever is swung upwardly about its fulcrum into the position shown in FIG. 4. A hook **31** carried upon the free end of the lever catches over the aft end of the pin **23** to releasably hold the lever in such camming position. When located in this position the side flats **21** and **22** each protrude moderately beyond the wall of the center-bore **15**. Upon swinging the lever **27** into a position which inactivates the cam the side flats are backed away sufficient to clear the wall of the center-bore, the center rib **20**, however, still protruding into said bore. The function of the described locking slugs is to releasably secure within said center-bore the neck section **33** of a power leg support means, gimbal housing or drive support member **34**, and will be hereinafter more particularly described. Suffice it to here say that said neck section presents a circumscribing groove **39** arranged to register with the cross-bore **14**, and that the perimeter of the neck section has upper and lower paired chordal flats, as **35** and **36**, spaced in correspondence with the spacing between the side flats of the two locking slugs when the latter are pressed inwardly by the camming head of the toe lever.

At the top and bottom of the gimbal housing and diametrically opposite one another there are provided inwardly pointing pivot pins **37**. These pins carry the ring component **38** of a gimbal joint or intermediate member, with the body component **40** thereof being pivoted in turn to the ring by pivot pins **41**. The hollow neck section **42** of such body fits in and is fixedly secured to the head end of a power leg **43**. A vertical tail shaft **44** is journaled for rotation within the power leg, having driving connection from its lower end to a propeller **45**.

To carry the drive through the hollow center of said gimbal joint from a driven shaft **46** at the front to the head end of said tail shaft **44** at the rear there is provided a coupling or universally flexible power transmission means including a constant velocity universal joint, the connection preferably being of the high angle type employing bell housings, as **47** and **48**. The bell housing **47** is formed upon the aft end of the shaft **46** and receives a journal mounting from the gimbal housing **34** by means of a ball bearing **50**. The bell housing **48** is formed upon the front end of a shaft **51** journaled by a ball bearing **52** in the neck section **42** of the gimbal body **40**. The two bell housings **47** and **48** face one another, and driving connection between the two is obtained by a stud shaft **53** splined by its ends to a respective one of two inner races, as **54** and **55**, provided for motion-transmitting hardened steel balls **56**. A set of such balls is provided for each of the two bell housings, with each such set rolling in grooved raceways **57** spaced apart at equidistant intervals of the inner circumference. **58** and **59** designate reduction bevel gears passing the drive from the aft end of shaft **51** to the head end of the tail shaft **44**.

It will be seen that the power leg presents a forwardly extending shoulder **60** located in spaced underlying relation to the gimbal body **40**, and upon this shoulder there is provided a longitudinal rib **61** having a steeply sloped back edge and a moderately sloped front edge. The back edge functions as a catch. A bolt **62** complements this catch, being yieldingly caught behind the catch by means of a spring **63** to normally locate the power leg in the position in which it is shown in FIG. 1, namely normal to the rotary axis of the forward component of the constant velocity universal joint.

Two jack-knifing links **64** and **65** are provided. Such links articulate, as at **66**, and are pivoted by their outer ends one to the body component **40** of the gimbal joint, as at **67**, and the other to the gimbal ring **38**, as at **68**. The purpose of these links is to limit the upward swing movement of the power leg. The bolt **62** and its spring **63** are socket in one said link, namely the link **64**, with the arrangement such that the pivot pin **66** interrupts a shoulder **70** of the bolt to limit the travel of the bolt as it is expressed by the spring. Link **64** also provide a socket **79** for the reception of a normally inactive locking bolt **71**. While not here illustrated, means are provided by which a roller **72** carried upon a lateral extension **73** of the locking bolt **71** is lowered automatically from a normal elevated position as the propeller of the boat is shifted into reverse.

There are a pair of said links **65**, one located upon one side and the other upon the other side of the link **64**, and the root pivots **68** are carried by eye-bolts **74** which are arranged for fore-and-aft adjustment upon mounting ears **75** which are made to turn bodily in unison with the gimbal ring **38**. The bolts proper of the eye-bolts are received through longitudinal slots **76** of the mounting ears, with clamping nuts **77** being complemented by interfitting serrations formed along the face of the ear and the opposing face of a washer **78** underlying the head of the eye-bolt.

From the foregoing it will be apparent that we have provided a through-transom drive permitting the power leg to swing upwardly about a transverse horizontal axis automatically in response to engagement of the underwater portion of the leg with any obstruction creating sufficient force to move the catch face of the rib **61**, against the resistance imposed by spring **63**, past the bolt **62**. Upon clearing the obstruction the power leg returns by its own weight to operating position whereupon bolt **62** again lodges behind the catch.

The purpose of the adjustable setting, as between the eye-bolts **74** and the mounting ears **75**, is to change the direction of the thrust line so as to provide, for any given boat, the attack angle of the power leg which best adapts itself to such boat. It will be noted that the slope of the mounting ears closely approximates an arc projected about a point occupied by the pin **67** when the latter moves to the upper extreme of the swing travel to which the power leg admits. The end accomplishment is that the attack angle may be freely changed to any setting within the fore and aft limits of the mounting ears without changing the predetermined upper swing limit of the power leg.

By unhooking lever **27** from the pin **23**, and swinging the lever into a position whereat its camming toe is inactive, the gimbal housing may be turned 180° about the center of the driving shaft **46** as an axis so as to swing the power leg upwardly into and out-of-the-way position. So placed, the chordal flats **35** of the gimbal housing's neck section **33** are located at the bottom in a position whereat the side flats **21** and **22** of the slugs **16** and **17** may be again brought inwardly by camming action of the toe **30** to lock the power leg in said inverted position. Should it be desired to remove the through-transom drive from the boat for repair or servicing, it is only necessary that the lever be unhooked, and the nut **24** unscrewed in a degree sufficient to back off the locking slugs so that the center

ribs **20** are completely clear of the center-bore **15**. The clutch-driven shaft has a spline connection with the driven side of the clutch, thus permitting the entire outboard structure including said shaft to be removed bodily.

The pins of the gimbal joint have as their function to permit horizontal swing movement of the power leg in either lateral direction, for purposes of steering the boat. Steering lines **80** and **81** (see FIG. 7) attach to ears **82** formed upon oppoiste sides of the power leg at the head end thereof.

It is thought that the invention will have been clearly understood from the foregoing detailed description of the illustrated preferred embodiment. Minor changes will suggest themselves and may be resorted to without departing from the spirit of the invention, wherefor it is intended that no limitations be implied and that the hereto annexed claims be given a scope fully commensurate with the broadest interpretation to which the employed language admits.

What is claimed is:

1. In a through transom drive, in combination with a hollow forward drive support housing fixedly associated with the hull of a boat and occupying an inboard position registering with an opening in the boat's transom, an outboard power leg carrying a propeller at its lower end, a jointed outboard housing comprising front and rear hollow sections of which the rear section is rigidly attached by its rear end to the power leg and extends forwardly therefrom, means removably connecting the front end of said front outboard housing section to the rear end of said drive support with said connected ends co-axial and supporting said outboard housing for swivel movement about the hollow centers of the connected ends as an axis, said means comprising a rearwardly facing round socket presented by said drive support into which said front outboard housing section is removably fitted and locking means for releasably locking such front section against removal from said socket, and a drive from an inboard engine passing through the hollow centers of the forward and outboard housings and connecting with a propeller-driving shaft in the power leg, the joint of said outboard housing being so formed as to permit the rear housing section with its supported power leg to swing in both directions laterally about a vertical axis for steering the boat and to tilt upwardly about a horizontal axis for raising the propeller, said tilting and swing axes approximately traversing one another, the support given by said jointed outboard housing to the power leg being such that when the boat is under way the power leg is enabled to tilt upwardly automatically by engagement of the underwater portion thereof with an obstruction in the water, while imposing such yielding resistance thereto as normally to hold the power leg at a given attack angle.

2. In a through-transom drive, in combination with a hollow forward drive support fixedly associated with the hull of a boat and occupying an inboard position registering with an opening in the boat's transom, an outboard power leg carrying a propeller at its lower end, a jointed hollow outboard housing free of said transom and comprising front and rear sections of which the front end of the front section detachably interfits with said drive support and extends rearwardly therefrom and the rear end of the rear section is rigidly attached to the power leg and extends forwardly therefrom, and a drive from an inboard engine passing through said drive support and said two sections of the outboard housing and connecting with a propeller-driving shaft in the power leg, said drive including fore and aft shafts joined within said outboard housing by a universal connection and said fore shaft being detachable from a drive connection to said engine, the joint between said front and rear sections of the outboard housing being so formed as to permit the rear section with its supported power leg to swing in both directions laterally about a vertical axis for

steering the boat and to tilt upwardly about a horizontal axis for raising the propeller, said tilting and swing axes approximately traversing one another, the support given by said two sections of the outboard housing to the power leg being such that when the boat is under way the power leg is enabled to tilt upwardly automatically by engagement of the underwater portion thereof with an obstruction in the water, while imposing such yielding resistance thereto as normally to hold the power leg at a given attack angle, said outboard housing together with said shafts and power leg being bodily removable rearwardly from said boat as a unit independently of said drive support and engine.

3. In a through transom drive, an outboard power leg means adapted to propel a vessel in a buoyant medium, said vessel having a transom means enclosing the stern of said vessel, means for defining an opening through the transom means, propeller means disposed at the lower end of said power leg means and adapted to be driven by a power transfer mechanism, said power transfer mechanism comprising gear means located within said power leg means, power leg support means located below the top of and disposed adjacent said means defining said opening in said transom and being connected to said vessel, means defining a central opening in said support means, a unitary intermediate means located on the outboard side of said transom and comprising a gimbal, first mounting means operatively supporting said gimbal means on said support means about a vertical axis with respect to said vessel for oscillatory movement of said gimbal means with respect to said support means about said vertical axis, second mounting means operatively supporting said power leg means on said gimbal means about a horizontal axis with respect to said vessel for oscillatory movement of said power leg means with respect to said gimbal means about said horizontal axis, said power transfer mechanism comprising first torque transmitting means supported for rotation in said opening in said power leg supporting means and drivingly connected with a prime mover adapted to be disposed within said vessel, second torque transmitting means supported for rotation in said power leg means and drivingly connected with said propeller means, universally flexible torque transmitting means drivingly connecting said first torque transmitting means with said second torque transmitting means, said first torque transmitting means including a portion being disposed in said central opening in said support means, said power transfer mechanism comprising a vertically disposed shaft means in said power leg means and extending upwardly no higher than a short distance above said universally flexible torque transmitting means so that said power leg means is movable to a tilt-up position, and said axes being in substantially intersecting relationship with said universally flexible torque transmitting means so that said outboard power leg is movable about said axes to steer the vessel and to tilt the outboard power leg, respectively.

4. A marine drive for a vessel having a stern closure means, a prime mover disposed within said vessel forward of said stern closure means, an outboard power leg operatively connected with said vessel and being disposed rearward of said stern closure means, propeller means disposed at a lower end of said power leg, power leg supporting means comprising a portion positioned on the aft side of said stern closure means and connected with said vessel, a first mounting means coincident with a steering axis of said outboard power leg, a second mounting means coincident with a tilt-up axis of said outboard power leg, unitary intermediate means located on the aft side of said stern closure means and being oscillatably connected with said power leg supporting means by one of said mounting means, said unitary intermediate means being oscillatably connected with said power leg by the other of said mounting means, a power transmitting means passing through an opening in said stern closure means and drivingly connecting said prime mover with said propeller means, said power transmitting means comprising a vertical shaft means in said power leg which extends upwardly in the power leg no higher than a short distance above said tilt-up axis so that said power leg is movable to a tilt-up position, said power transmitting means further comprising a universally flexible torque transmitting means disposed on or near each of said axes whereby during steering or tilt-up of said outboard power leg, said power transmitting means is articulated through said universally flexible torque transmitting means thus providing a torque transmitting connection to said propeller during either tilt-up or steering of said power leg.

5. In a through transom drive, a vertically disposed outboard power leg means adapted to propel a marine vessel in a buoyant medium, said vessel comprising a stern closure means having an upper portion, means for defining an opening through the stern closure means, propeller means disposed at the lower end of said power leg means and adapted to be driven by a power transfer mechanism, said power transfer mechanism comprising gear means located within said power leg means, power leg supports means located below the upper portion of said transom and positioned adjacent said means defining said opening in said transom, means connecting said support means to said vessel, means defining a central opening in said support means, a unitary intermediate means, first mounting means operatively connecting said unitary intermediate means on said support means for oscillatory movement of said unitary intermediate means with respect to said support means about a first axis, second mounting means operatively supporting said power leg means on said unitary intermediate means for oscillatory movement of said power leg means with respect to said unitary intermediate means about a second axis, said power transfer mechanism comprising first torque transmitting means drivingly connected with a prime mover, and being supported for rotation in said opening in said transom, second torque transmitting means drivingly connected with said propeller means and being supported for rotation in said power leg means, universally flexible torque transmitting means drivingly connecting said first torque transmitting means with said second torque transmitting means, said first torque transmitting means including a portion being disposed in said central opening in said support means, said first axis being disposed substantially normal to said second axis, said power leg means having an upper housing portion extending upwardly no higher than a short distance above said universally flexible torque transmitting means so that said power leg means is movable to a tilt-up position, and said axes being in substantially intersecting relationship with said universally flexible torque transmitting means so that said outboard power leg is movable about said axes to tilt upwardly and to steer, respectively.

6. In a marine drive, a combination comprising a vessel comprising a stern closure means, a prime mover disposed within said vessel forward of said stern closure means, vertically positioned outboard power leg means connected with said vessel and being disposed rearwardly of said stern closure means, propeller means disposed at a lower end of said power leg means, power leg supporting means connected with said vessel, unitary intermediate means, positioned rearwardly of said stern closure means, first mounting means operatively supporting said unitary intermediate means on said power leg supporting means for rotary movement of said unitary intermediate means with respect to said power leg supporting means about a first axis, second mounting means operatively supporting said power leg means on said unitary intermediate means for rotary movement of said power leg means with respect to said unitary intermediate means about a second axis, power transmitting means passing through an opening in said stern closure means and drivingly connecting said prime mover with said propeller

means, means rotatably supporting said power transmitting means in said opening in said stern closure means, said power transmitting means comprising a universally flexible torque transmitting means, and means comprising a power leg upper housing portion extending upwardly no higher than a short distance above said universally flexible torque transmitting means and further comprising said unitary intermediate means to allow said outboard power leg to tilt upwardly and to steer about said axes.

7. In a through transom drive, in combination with a hollow forward drive support housing fixedly associated with the hull of a boat and registering with an opening in the boat's transom, an outboard power leg carrying a propeller at its lower end, a jointed outboard housing comprising front and rear hollow sections of which the rear section is rigidly attached by its rear end to the power leg and extends forwardly therefrom, means connecting the front end of said front outboard housing section to the rear end of said drive support with said connected ends co-axial and supporting said outboard housing for swivel movement about the hollow centers of the connected ends as an axis, said means comprising a rearwardly facing round socket presented by said drive support into which said front outboard housing section is fitted, power transmitting drive means operatively connected with an inboard engine and passing through the hollow centers of the forward and outboard housings and connecting with a propeller-driving shaft in the power leg, means rotatably supporting said power transmitting means in said forward and outboard housings, means including the joint of said outboard housing being so formed as to permit the rear housing section with its supported power leg to swing in both directions laterally about a vertical axis for steering the boat and to tilt upwardly about a horizontal axis for raising the propeller, said tilting and swing axes approximately traversing one another, said power transmitting drive means including universally flexible power transmitting means disposed on or near the traverse portion of said axis, and the support given by said jointed outboard housing to the power leg being such that when the boat is under way the power leg is enabled to tilt upwardly automatically by engagement of the underwater portion thereof with an obstruction in the water, while imposing such yielding resisstance thereto as normally to hold the power leg at a given attack angle.

8. In a through-transom drive, in combination with a hollow forward drive support fixedly associated with the hull of a boat and registering with an opening in the boat's transom, an outboard power leg carrying a propeller at its lower end, a jointed hollow outboard housing comprising front and rear sections of which the front end of the front section interfits with said drive support and extends rearwardly therefrom and the rear end of the rear section is rigidly attached to the power leg and extends forwardly therefrom, power transmitting drive means from an inboard engine passing through said drive support and said two sections of the outboard housing and connecting with a propeller-driving shaft in the power leg, said drive means including fore and aft shafts joined within said outboard housing by a universal connection, bearing means rotatably supporting said drive means for rotation in said two sections of said outboard housing, means including the joint between said front and rear sections of the outboard housing being so formed as to permit the rear section with its supported power leg to swing in both directions laterally about a vertical axis for steering the boat and to tilt upwardly about a horizontal axis for raising the propeller, said tilting and swing axes approximately traversing one another, said universal connection being disposed on or near the traverse portion of said axes, and the support given by said two sections of the outboard housing to the power leg being such that when the boat is under way the power leg is enabled to tilt upwardly automatically by engagement of the underwater portion thereof with an obstruction in the water, while imposing such yielding resistance thereto as normally to hold the power leg at a given attack angle.

9. In a device according to claim 6, said outboard power leg having a forwardly facing, hollow, hemispherically shaped portion disposed at the upper portion of said power leg and said second mounting means pivotally connecting said hemispherically shaped portion to said unitary intermediate means.

10. In a device according to claim 6, said unitary intermediate means comprising a substantially ring shaped portion, and said power leg having a hemispherically shaped portion disposed adjacent said ring shaped portion.

11. In an outboard drive assembly for a walled vessel having an inboard source of motive power positioned adjacent an apertured vessel transom wall, a drive means comprising in combination, a universally flexible power transmission having a substantially coaxial input shaft and output shaft respectively adapted to be drivingly coupled to the inboard source of motive power and to the outboard drive assembly, a drive support member having a portion extending through said transom wall and a portion extending rearwardly of the transom wall, said outboard drive assembly rotatably supporting the output shaft for driving coaction therewith, and an intermediate member pivotally supported for rotation about one axis on the rearward portion of the drive support member and having means pivotally supporting the outboard power leg means for rotation about a transverse axis substantially intersecting said one axis and coacting to provide a compound pivotal movement for the outboard power leg means relative to the drive support member, and said outboard power leg comprising an upper extremity extending upwardly no higher than a short distance above said coaxial input shaft and output shaft so that said power leg means is movable to a tilt-up position.

12. In an outboard drive assembly for a walled vessel having an inboard source of motive power positioned adjacent an apertured vessel transom wall, a drive means comprising in combination an outboard power leg, a universally flexible power transmission having a substantially coaxial input shaft and output shaft, respectively, adapted to be drivingly coupled to the inboard source of motive power and to the outboard drive assembly, a drive support member adapted to be mounted in the apertured vessel transom wall for driving access to the inboard source of motive power, said outboard drive assembly comprising said outboard power leg rotatably supporting the output shaft for driving coaction therewith, an intermediate member pivotally supported for rotation about an upright axis on the drive support member and having means pivotally supporting the outboard power leg means for rotation about a transverse axis substantially intersecting said upright axis and coacting to provide a compound pivotal movement for the outboard drive assembly relative to the drive support member so that said intermediate member is oscillated for steering said outboard drive assembly and the kick-up movement of said outboard drive assembly is independent of said intermediate member, and said outboard power leg comprising an upper housing portion extending upwardly no higher than a short distance above said coaxial input shaft and output shaft to enable the kick-up movement to be effected.

13. A marine drive for a vessel having a stern closure means, a prime mover disposed within said vessel forward of said stern closure means, an outboard power leg being disposed rearward of said stern closure means and operatively connected with said vessel, propeller means operatively connected with said power leg, power leg supporting means connected with said vessel, a first mounting means coincident with a steering axis of said outboard power leg, a second mounting means coincident with a tilt-up axis of said outboard power leg, intermediate means located on the aft side of said stern closure means

and being oscillatably connected with said power leg supporting means by one of said mounting means, said intermediate means being oscillatably connected with said power leg by the other of said mounting means, a power transmitting means passing through an opening in said stern closure means and drivingly connecting said prime mover with said propeller means, said power transmitting means comprising a universally flexible torque transmitting means disposed on or near each of said axes, means rotatably supporting said power transmitting means, said power leg comprising an upper housing portion being positioned no higher than a short distance above said tilt-up axis so that said power leg is free to move to a tilt-up position, means comprising said intermediate means, said outboard power leg and said universally flexible torque transmitting means arranged so that during steering or tilt-up of said outboard power leg, said power transmitting means is articulated through said universally flexible torque transmitting means to provide a torque transmitting connection to said propeller during either tilt-up or steering of said outboard power leg.

14. In an outboard drive assembly for a walled vessel having an inboard source of motive power positioned adjacent an apertured vessel transom wall, a drive means comprising in combination, an outboard power leg, a universally flexible power transmission means having a substantially coaxial input shaft and output shaft, respectively, adapted to be drivingly coupled to the inboard source of motive power and to the outboard power leg, a drive support member having a portion extending through said transom wall and a portion extending rearwardly of the transom wall and connected with the vessel, said outboard power leg comprising means for rotatably supporting the output shaft for driving coaction with the input shaft, an intermediate member pivotally supported for movement about a vertical axis on the rearward portion of the drive support member and having means supporting the outboard power leg for movement about a transverse axis substantially intersecting said vertical axis and coacting to provide a compound pivotal movement of the outboard power leg relative to the drive support member, said outboard power leg comprising an upper housing portion extending no higher than a short distance above said coaxial input shaft and output shaft to enable the power leg to be movable to a fully tilted position.

15. A marine drive for a vessel having a stern closure means, a prime mover disposed within said vessel forward of said stern closure means, vertically positioned outboard power leg means being disposed rearwardly of said stern closure means and being operatively connected with said vessel, propeller means disposed at a lower end of said power leg means, power leg supporting means connected with said vessel, an intermediate member positioned rearwardly of said stern closure means, first mounting means carried by said power leg supporting means comprising at least one vertically disposed means operatively supporting said intermediate member on said power leg supporting means for movement of said intermediate member with respect to said power leg supporting means about a vertical axis of movement of said vertically disposed means, second mounting means on said power leg means comprising at least one horizontally disposed means operatively supporting said power leg means on said intermediate member for movement of said power leg means with respect to said intermediate member about a horizontal axis of movement of said horizontally disposed means, power transmitting means passing through an opening in said stern closure means and drivingly connecting said prime mover with said propeller means, said power transmitting means comprising a universally flexible torque transmitting means disposed on or near each of said axes, and means comprising said intermediate member, said universally flexible torque transmitting means, and said power leg means, to allow said power leg means to tilt upwardly about said horizontal axis and to steer about said vertical axis while power is transmitted through said power transmitting means to said propeller.

16. A marine drive for a vessel having a stern closure means, a prime mover disposed within said vessel forward of said stern closure means, an outboard power leg disposed rearwardly of said stern closure means and being operatively connected with said vessel, propeller means operatively connected with said power leg, power leg supporting means connected with said vessel, coaxial vertically spaced mounting means positioned on said power leg supporting means, gimbal means operatively connected with said vertically spaced mounting means to provide for oscillatory movement of said gimbal means about the axis of said vertically spaced mounting means, coaxial horizontally spaced mounting means positioned on said gimbal means, said power leg being operatively connected with said horizontally spaced mounting means, said power leg comprising a forwardly projecting portion disposed for selective interfitting relationship with said gimbal means, a power transmitting means, disposed in an opening in said stern closure means and drivingly connecting said prime mover with said propeller means, means rotatably supporting said power transmitting means, said power transmitting means comprising universally flexible torque transmitting means disposed between said vertically spaced mounting means and said horizontally spaced mounting means, respectively, so that said power leg is steerable about the axis of said vertically spaced mounting means and is tiltable upwardly about the axis of said horizontally spaced mounting means during transmission of power from the prime mover to the propeller means through the universally flexible torque transmitting means.

17. In a boat having a stern transom with an opening therethrough spacedly below the upper edge of the transom, an outboard housing spaced aft of said transom and having an upper end portion aligned with said opening, an inboard engine having a rearwardly extending driving element substantially coaxially aligned with said transom opening, said driving element having a rearward end, flexible connecting shaft means connected to said driving element and extending aft thereof, said shaft means and driving element establishing a drive connection from said inboard engine through said transom opening to said outboard housing, said shaft means being flexible between said transom and said upper end portion of said housing, a propeller mounted on said housing below said upper end portion, means in said housing for connecting said propeller to said drive connection, a generally vertical pivot pin and a horizontal pivot pin each located outwardly of said flexible shaft means and being disposed between said transom and said upper end portion of said outboard housing, a support member disposed between said transom and said upper end portion of said housing, means comprising one of said pins supportingly connecting said support member to said boat for pivoting of said support member with respect to said transom on the axis of said one pin, and means comprising said other pin supportingly connecting said housing to said support member for pivoting of said housing with respect to said support member on the axis of said other pin, said upper end portion of said housing terminating upwardly slightly above the level of said horizontal pivot pin.

18. A marine drive for a vessel having a stern closure means, a prime mover disposed within said vessel forward of said stern closure means, an outboard power leg operatively connected with said vessel and being disposed rearward of said stern closure means, propeller means disposed at a lower end of said power leg, power leg supporting means comprising a portion positioned on the aft side of said stern closure means and connected with said vessel, a first mounting means coincident with a steering axis of said outboard power leg, a second mounting means coincident with a tilt-up axis of said outboard power leg, an intermediate support member located on the aft side of said stern closure means and being os-

cillatably connected with said power leg supporting means by one of said mounting means, said intermediate member being oscillatably connected with said power leg by the other of said mounting means, a power transmitting means passing through an opening in said stern closure means and drivingly connecting said prime mover with said propeller means, said power transmitting means comprising an upright shaft in said power leg, said power leg being movable on said tilt-up axis to a tilt-up position, said upright shaft being laterally spaced from said first mounting means, said power transmitting means further comprising a universally flexible torque transmitting means disposed on or near each of said axes whereby, during steering or tilt-up of said outboard power leg, said power transmitting means is articulated through said universally flexible torque transmitting means thus providing a torque transmitting connection to said propeller during either tilt-up or steering of said power leg.

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MILTON BUCHLER, *Primary Examiner.*

A. MITCHELL, T. MAJOR, *Assistant Examiners.*