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OUTBOARD MARINE PROPULSION APPARATUS

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This invention relates to outboard propulsion apparatus for use with a boat powered by an inboard engine and having an inboard drive shaft. It more particularly relates to a portable outboard propulsion attachment which may be secured to the transom of a motor boat powered by an inboard motor, and includes means inboard the boat for transmitting power from the inboard drive shaft to the portable propulsion attachment.

Heretofore, outboard propulsion apparatus for use with motor boats having inboard engines and inboard drive shafts have had several disadvantages. These devices were usually designed for permanent attachment to a boat. Removal could be effected only with great difficulty, primarily because of the complexity of the means of attachment utilized, but also because the apparatus was bulky and heavy. In the portable forms of the apparatus which did exist, large holes had to be made in the transom or hull of the boat for the installation of means for connecting the inboard drive shaft directly to the outboard attachment, thereby creating additional problems of water seepage and corrosion, as well as permanently altering the character of the transom.

Accordingly, it is an object of this invention to provide a portable light-weight outboard propulsion attachment which may be easily installed in any boat having an inboard motor and inboard drive shaft.

Another object of this invention is to provide outboard propulsion apparatus for a boat having an inboard drive shaft which can be detachably secured over the transom of the boat without need for drilling holes through the transom or boat hull.

Still another object of this invention is to provide an outboard propulsion apparatus universally adaptable for a wide variety of inboard drive shafts and inboard marine motors.

A further object of this invention is to provide outboard propulsion apparatus which is supplied power from an inboard drive shaft over the transom of a boat and which has counter-rotating propellers to maximize power, to minimize cavitation and to neutralize the sideward thrust created by the torque of each propeller.

An additional object of this invention is to provide outboard propulsion apparatus which will pivot up out of the water whenever it strikes bottom or an obstruction.

Briefly, the present invention comprises a main plate adapted for spanning the transom of a boat and having an inboard section and an outboard section. An upright auxiliary drive shaft is journaled to the inboard section of the main plate and extends through it, providing an upper and lower portion of the drive shaft. A pair of driving pulleys are affixed to the upper portion of the drive shaft.

A pair of laterally spaced depending hollow tubular steering members are journaled to the outboard section of the main plate. Propeller housing means are affixed to the lower ends of each of the steering members and carry a propeller on each end thereof. Propeller drive shafts are journaled within the steering members in co-axial relation with them, and are geared at their lower ends to the propellers for counter-rotative action relative to one another. The upper ends of the propeller drive shafts extend above the main plate. Pulley means are secured to the upper ends of the propeller drive shafts and a pair of belt members are trained around the driving and pulley means. Chain and sprocket means are interconnected with the steering members for pivoting

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them as a unit and causing both propellers to pivot in a plane passing through both propeller axes.

Transom clamp means is connected with the apparatus of this invention and detachable therefrom when the propeller housing is pivoted upwardly with respect to it. Transmission gear means is adapted for and is coupled to the main drive shaft of the inboard engine. The transmission gear means has a right angle take-off to which is coupled universal means. The universal means couples the take-off to the lower portion of the auxiliary drive shaft and transmits power to the propulsion apparatus.

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

FIGURE 1 is a side elevation of the starboard side of outboard propulsion apparatus attached to the transom of a boat, embodying the principles of this invention;

FIGURE 2 is an end elevation of the outboard propulsion apparatus;

FIGURE 3 is a plan view of the apparatus;

FIGURE 4 is a fragmentary partially sectioned side elevation of the port propeller and propeller gear assembly; and

FIGURE 5 is an enlarged elevational section of the right angle transmission component.

Referring now to the drawings, FIGURE 1 shows a motor boat 10 having an inboard motor (not shown), an inboard drive shaft 11, and a transom 12.

The outboard propulsion apparatus of this invention comprises a right angle transmission assembly 13, an upwardly extending drive shaft 14 and a portable outboard propulsion attachment, referred to generally by the numeral 15.

The right angle transmission assembly 13 is secured to the inside of boat 10, by bolts 16, 16' or other suitable means. Inboard drive shaft 11 is connected to the transmission assembly 13 by front universal joint 17. Universal joint 18 links the transmission assembly 13 to drive shaft 14.

A sectional elevation of the right angle transmission assembly 13 is depicted in FIG. 5, with gears in neutral. Assembly 13 is a right angle transmission of the conventional type comprising essentially a shift gear 19 secured to the main transmission drive shaft 20, and beveled gears 21, 22 and 23 in the configuration shown in FIG. 5. Shift gear 19 will cause shaft 26 to rotate, eventually producing forward motion of boat 10, by pulling gear stick 24, pivoting at point 25, to the forward position denoted by the letter "F" as shown in dotted lines. The power chain then runs from shaft 20 to shift gear 19, thence to beveled gear 21, to gear 22 and shaft 26. The reverse position is denoted by the letter "R" with gear stick 24 shown in dotted lines in that position. Rotation of shift gear 19 causes beveled gears 23 and 22 to rotate, transmitting power, in the reverse direction, to shaft 26.

Upwardly extending drive shaft 14 is splined at its upper end 27 for easy and firm attachment to the splined universal joint 28. The lower portion of joint 28 is thus splined for reception of shaft 14; the upper portion thereof is secured and locked to the main drive pulley shaft 29.

The outboard propulsion apparatus 15 is detachably secured to transom 12. Referring to FIG. 3, as well as FIG. 1, transom clamps 30, 31 are clamped to the port and starboard sides of the transom 12 by locking screws 32, 33. The main plate 33 of attachment 15 has brackets 34, 35 integrally formed thereon or bolted thereto, one such bracket for each of said transom clamps 30, 31. Clamps 30, 31 are then fitted within brackets 34, 35 and are secured by pins 38, 39 which also provide a hinge about which attachment 15 pivots.

The longitudinal axes of both pins 38 and 39 are

on exactly the same line as the longitudinal axis of the pin 40 joining the upper and lower portions of splined universal joint 28. Thus, by these means, it is possible for attachment 15 to pivot or kick up out of the water without disengaging the vertical drive shaft 14 from universal joint 28. This is particularly advantageous should attachment 15 strike bottom or some other underwater obstruction. Then, attachment 15 will pivot on the longitudinal axes of pins 38, 39 and the pin of universal joint 28, without interrupting the transmission of power from shaft 14 to the attachment 15.

Outboard propulsion attachment 15 comprises power transmitting means, soon to be described, enclosed within propeller drive shaft housings 41, 42 and an upper housing or hood 43. Hood 43 is removably attached to main plate 33 to which propeller drive shaft housings 41, 42 are permanently secured. Housings 41, 42 extend downwardly from main plate 33 aft transom 12. Hood 43 is made of a light weight, durable material such as fiber glass, or a light corrosion-resistant sheet metal. Housings 41 and 42 are made of a relatively light weight, heavy duty metal such as steel.

Enclosed within main plate 33 and hood 43 is pulley and belt means 44 which transmits power from the upwardly extending drive shaft 14 to propeller drive shafts 45, 46.

Pulley and belt means 44 comprises a main pulley drive shaft 29 extending upwardly through main plate 33 and bearing housing 47, which also serves to support shaft 29. Lower and upper bearings 48, 49 are provided. As indicated above, the lower end of shaft 29 is secured to the splined universal joint 28.

Keyed and locked to shaft 29 is the main drive pulley 50, which drives the upper timing belt 51 and lower timing belt 52, which in turn, drive respectively the port propeller drive shaft pulley 53 and starboard propeller drive shaft pulley 54.

Various means may be used for transmitting power from pulley 50 to pulleys 53, 54. Timing belts having a tensile strength of at least 5,000 pounds are preferable, and are easily replaced if they become broken or damaged. Particularly desirable in this respect are belts whose tension member consists of a layer of continuously wound steel wire, surrounded by a fabric layer impregnated with neoprene or the like. The steel wire is woven in a way which provides regularly spaced teeth 55. The belt resembles, in miniature, the continuous tread used on a tank or caterpillar tractor. It is preferable to use pulleys 50, 53 and 54 having teeth 56 of the same pitch diameter as the teeth 55 of belts 51, 52.

Propeller drive shafts 45, 46 are secured to pulleys 53, 54 and extended downwardly through propeller drive shaft housings 41, 42 and through steering shafts 58, 58B.

Referring to FIG. 1 which shows only the starboard side of the apparatus of this invention, propeller drive shaft 46 is supported, at its upper end, by bushings 59 and upper double bearings 60; and at its lower end by bushings 61 and double bearings 62. Bearings 60 and 62 are mounted within machined portion of steering shaft 58. Sealed bearings, which absorb thrust from all directions, are preferred. The bushing and bearing arrangement on the port side is substantially identical with that on the starboard side, with the exception that three, rather than two bearings are preferably provided on the propeller drive shaft 45. Two bearings 60B, 60C are installed on the upper portion of the port side drive shaft 45 since that shaft is longer than shaft 46 and must extend upward to pulley 53 which is higher than pulley 54. (See FIG. 2.)

The propeller drive shafts 45, 46 are made of heat-treated steel, and are identical except that shaft 45 is longer than shaft 46 for the reason set out in the preceding paragraph.

Propeller drive shaft extensions 63, 64 are detachably secured to propeller drive shafts 45, 46 and transmit

power from the latter shafts to the propeller gear assemblies 65, 66, which in turn, transmits power to propellers 67, 68.

In outboard motors or outboard propulsion attachments, it is preferable to employ counter-rotating propellers in order to maximize thrust, minimize cavitation and cancel out the sideward thrust on the boat resulting from the angular momentum of a single propeller blade. This sideward thrust makes steering difficult. It is overcome by employing two, counter-rotating propellers, the sideward thrust of one propeller cancelling out the other propeller.

Referring to FIG. 1 and FIG. 4, counter-rotation is achieved by an adjustment in the position of gears in the propeller gear assemblies 65, 66. In the port gear assembly 65 (FIG. 4), the beveled drive gear 69 is positioned forward the pinion gear 70. In the starboard gear assembly 70 (FIG. 1) the beveled drive gear 71 is positioned aft the pinion gear 72. In addition, propeller 67 must be a left-handed propeller, and propeller 68 must be a right-handed propeller. In other words, each propeller must have a pitch opposite the other. The propellers selected are the standard three blade type, the size and pitch diameter of which depends upon the size and type of boat and the power of its inboard engine.

Lower housing portions 73, 74 of propeller drive shaft housings 41, 42 enclose propeller gear assemblies 65, 66 and propeller drive shaft extensions 63, 64. The upper parts of housing portions 73, 74 form cavitation deflectors 75, 76, which minimize the cavitation about propellers 67, 68. Propeller drive shaft housings 41, 42 are separated from lower housing portions 73, 74 at points of attachment 87, 88, permitting housing portions 73, 74 to rotate on their longitudinal axes for steering purposes. Housing portions 73, 74 are secured to steering shafts 58, 58B by bushings 61, 61B.

Steering means is incorporated in the outboard propulsion apparatus of this invention. The type utilized is that which is adaptable for a boat 10 having a steering wheel (not shown) and steering cables 77, 78. Steering cables 77, 78 are attached by clevis and pin or other suitable means to a V-shaped arm 79 which is situated under the main plate 33 of attachment 15.

A main steering sprocket pulley 80 is keyed and locked to a shaft 81, running up through plate 33. Arm 79 is secured at the lower end of shaft 81. A bushing 82 pressed into plate 33, supports shaft 81.

On the extreme upper end of each steering shaft 58, 58B steering sprocket pulleys 83, 84 are attached. The steering shaft for the port side is shown in FIG. 2 and is identical with that of the starboard side, illustrated in FIG. 1. A steering drive chain 85 is secured to the main sprocket pulley 80 and sprocket pulleys 83, 84. Chain 85 transmits power for steering from the V-shaped arm 79 and pulley 80 to pulleys 83, 84 and each steering shaft 58, 58B. Turnbuckles 86, 87, 88 are provided and enable the tension of chain 85 to be adjusted.

By turning the steering wheel, an operator will thus cause angular movement of arm 79. The resultant torque is transmitted through shaft 81 to main sprocket pulley 80, and thence to pulleys 83, 84 by chain 85. The steering shafts 58, 58B each turn through identical angles, transmitting torque to lower housing portions 73, 74.

As described earlier herein shafts 58, 58B are supported at their upper ends by bushings 59, 59B; and at their lower ends by bushings 61, 61B. The lower bushings 61, 61B are pressed into the lower housing portions 73, 74, forming a separate rotatable section of housings 42, 43. The points of detachment, below which lower housing portions 73, 74 are free to move, are denoted by the numbers 87, 88. Thus the torque transmitted from shafts 58, 58B causes housing portions 73, 74 and propellers 67, 68 to rotate through identical angles.

For convenience of repair, lower housing portions 73, 74 are manufactured in two sections: the upper sections

89, 90 to which bushings 61, 61B are attached; and the lower sections 91, 92 which are bolted to upper sections 89, 90 at junctions 93, 94.

Each transom clamp 30, 31 has an elongated extension portion 95, 96 integrally formed on the lower aft portions thereof. Saddle plates 97, 98 are locked with pins 99, 100 to extensions 95, 96. Saddle plates 97, 98 provide supports for housings 41, 42. When the propulsion apparatus of this invention is functioning, the thrust from propellers 67, 68 causes housings 41, 42 to press against plates 97, 98. Simple locking devices 101, 102 join saddle plates 97, 98 to the body of the transom clamps 30, 31. Locking devices 101, 102 are released when the boat 10 is moving forward. In the event attachment 15 strikes an underwater obstruction, it will pivot up out of the water on pins 38, 39 avoiding any damage. When the boat is in reverse, locking devices 101, 102 must then be secured to prevent the propellers from screwing attachment 15 out of the water.

One-way shock absorbers 103, 104 are positioned as shown in FIGURE 3, attached to main plate 33, the lower end thereof being secured to horizontal posts 105, 106 which are integrally formed on housings 41, 42. The absorbers 103, 104 are one-way in that they permit the attachment 15 to pivot outwardly from the boat rather rapidly; but allow attachment 15 to return to its original position more slowly and smoothly.

The apparatus of this invention is easy to install. The attachment 15 is light in weight and may be carried by the operator with facility. In order to install the apparatus of this invention in a boat 10 having an inboard motor and inboard drive shaft 11, a right angle transmission assembly 13 and an upwardly extending drive shaft 14 is secured inboard said boat 10, in the general area of the transom 12. Assembly 13 is linked to the drive shaft 11 by a universal joint 17. The assembly 13 and drive shaft 14 become a permanent part of the power chain of boat 10.

Transom clamps 30, 31 are next secured to the starboard and port sides of the transom 12 by tightening the locking screws 32, 33. Clamps 30, 31 are oriented such that the protruding portions 36, 37 thereof are inboard the boat 10. The operator then carries attachment 15 to boat 10, placing it in position such that hood 43 enclosing the pulley and belt means 44 overlies transom 12; and the protruding portions 36, 37 of clamps 30, 31 slide into the brackets 34, 35 of main plate 33. Portions 36, 37 are then secured by pins 38, 39. The operator must also guide the splined upper end 27 of the upwardly extending drive shaft 14 into the splined receiving end of universal joint 28. This operation is easily accomplished, since shaft 14 will slide into joint 28 without difficulty. The installation operation may be carried out in a minimum of time and with no difficulty. Installation is better effected if the brackets 34, 35 and joint 28 of attachment 15 are lined up with clamps 30, 31 and shaft 14. Then the operator simply lowers attachment 15 into place over transom 12, makes all necessary connections simultaneously.

Installation is completed by securing steering cables 77, 78 to the V-shaped arm 79. In removing the apparatus, one merely reverses the above procedure.

Attachment 15 is equipped with two propellers 67, 68 for several reasons. The cavitation created by the rotation of a single propeller results in a great loss of efficiency. When two laterally spaced propellers are in operation, cavitation still results about each propeller, but the inefficiency is countered to some extent by the double working surface area of two propellers powered by a single inboard engine. Furthermore, one propeller produces enough torque and sideward thrust to push the boat off course and make steering difficult. At high speeds this sideward thrust will often cause a boat to slip dangerously in a tight turn. These disadvantages are overcome

by using two counter-rotating propellers, in which the torque of one cancels the torque of the other.

While one embodiment of the invention has been shown and described herein, it is to be understood that certain changes or additions might be made by those skilled in this art without departing from the scope and spirit of the present invention.

What is claimed is:

1. Outboard propulsion apparatus for use with an inboard marine engine comprising a main plate adapted for spanning the transom of a boat and having an inboard section and an outboard section, an auxiliary drive shaft journaled to said main plate in said inboard section and extending therethrough, a pair of driving pulleys affixed to said shaft, a pair of hollow steering members journaled to said plate, respective propeller housing means affixed to said steering members each carrying a propeller thereon, propeller drive shafts journaled within said steering members and geared to said propellers for counter rotative operation thereof relative to one another, pulley means on said propeller drive shafts, a pair of belt members each trained around a respective driving pulley and pulley means, and means interconnected with said steering members for pivoting them as a unit.

2. Outboard propulsion apparatus for use with an inboard marine engine comprising a main plate adapted for spanning the transom of a boat and having an inboard section and an outboard section, an auxiliary drive shaft journaled to said main plate in said inboard section and extending therethrough to provide an upper portion and a lower portion of said shaft, a pair of driving pulleys affixed to said shaft on said upper portion, a pair of hollow steering members journal to said plate, respective propeller housing means affixed to said steering members each carrying a propeller thereon, propeller drive shafts journaled within said steering members and geared to said propeller for counter rotative operation thereof relative to one another, pulley means on said propeller drive shafts, a pair of belt members each trained around a respective driving pulley and pulley means, and means interconnected with said steering members for pivoting them as a unit.

3. Outboard propulsion apparatus for use with an inboard marine engine comprising a main plate adapted for spanning the transom of a boat and having an inboard section and an outboard section, an upright auxiliary drive shaft journaled to said main plate in said inboard section and extending therethrough to provide an upper portion and a lower portion of said shaft, a pair of driving pulleys affixed to said shaft on said upper portion, a pair of hollow tubular steering members journaled to said outboard section of said plate, respective propeller housing means affixed to said steering members each carrying a propeller thereon, propeller drive shafts journaled within said steering members in a coaxial relation therewith and geared to said propellers for counter rotative operation thereof relative to one another, pulley means on said propeller drive shafts, a pair of belt members each trained around a respective driving pulley and pulley means, and means interconnected with said steering members for pivoting them as a unit.

4. Outboard propulsion apparatus for use with an inboard marine engine comprising a main plate adapted for spanning the transom of a boat and having an inboard section and an outboard section, an upright auxiliary drive shaft journaled to said main plate in said inboard section and extending therethrough to provide an upper portion and a lower portion of said shaft, a pair of driving pulleys affixed to said shaft on said upper portion, a pair of laterally spaced hollow tubular steering members journaled to said outboard section of said plate, respective propeller housing means affixed to said steering members each carrying a propeller thereon, propeller drive shafts journaled within said steering members in a coaxial relation therewith and geared to said propellers for

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counter rotative operation thereof relative to one another, pulley means on said propeller drive shafts, a pair of belt members each trained around a respective driving pulley and pulley means, and means interconnected with said steering members for pivoting them as a unit.

5. Outboard propulsion apparatus for use with an in-board marine engine comprising a main plate adapted for spanning the transom of a boat and having an inboard section and an outboard section, an upright auxiliary drive shaft journaled to said main plate in said inboard section and extending therethrough to provide an upper portion and a lower portion of said shaft, a pair of driving pulleys affixed to said shaft on said upper portion, a pair of laterally spaced depending hollow tubular steering members journaled to said outboard section of said plate at their upper ends, respective propeller housing means affixed to the lower ends of said steering members each carrying a propeller thereon, propeller drive shafts journaled within said steering members in a coaxial relation therewith and geared to said propellers for counter rotative operation thereof relative to one another, pulley means on the upper ends of said propeller drive shafts, a pair of belt members each trained around a respective driving pulley and pulley means, and means interconnected with said steering members for pivoting them as a unit.

6. Outboard propulsion apparatus for use with an in-board marine engine comprising a main plate adapted for spanning the transom of a boat and having an inboard section and an outboard section, an upright auxiliary drive shaft journaled to said main plate in said inboard section and extending therethrough to provide an upper portion and a lower portion of said shaft, a pair of driving pulleys affixed to said shaft on said upper portion, a pair of laterally spaced depending hollow tubular steering members journaled to said outboard section of said plate at their upper ends, respective propeller housing means affixed to the lower ends of said steering members each carrying a propeller thereon, propeller drive shafts journaled within said steering members in a coaxial relation therewith and geared to said propellers for counter rotative operation thereof relative to one another, pulley means on the upper ends of said propeller drive shafts, a pair of belt members each trained around a respective driving pulley and pulley means, and chain and sprocket means interconnected with said steering members for pivoting them as a unit and causing both of said propellers to pivot in a plane passing through both propeller axes.

7. Outboard propulsion apparatus for use with an in-board marine engine comprising a main plate adapted for spanning the transom of a boat and having an inboard section and an outboard section, an upright auxiliary drive shaft journaled to said main plate in said inboard section and extending therethrough to provide an upper portion and a lower portion of said shaft, a pair of driving pulleys affixed to said shaft on said upper portion, a pair of laterally spaced depending hollow tubular steering members journaled to said outboard section of said plate at their upper ends, respective propeller housing means affixed to the lower ends of said steering members each carrying a propeller thereon, propeller drive shafts journaled within said steering members in a coaxial relation therewith and geared to said propellers for counter rotative operation thereof relative to one another, pulley means on the upper ends of said propeller drive shafts, a pair of belt members each trained around a respective driving pulley and pulley means, chain and sprocket means interconnected with said steering members for pivoting them as a unit and causing both of said propellers to pivot in a plane passing through both propeller axes, and transom clamp means connected with said apparatus and detachable therefrom upon pivoting of said propeller housing means upwardly with respect thereto.

8. Outboard propulsion apparatus for use with an in-

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board marine engine comprising a main plate adapted for spanning the transom of a boat and having an inboard section and an outboard section, an upright auxiliary drive shaft journaled to said main plate in said inboard section and extending therethrough to provide an upper portion and a lower portion of said shaft, a pair of driving pulleys affixed to said shaft on said upper portion, a pair of laterally spaced depending hollow tubular steering members journaled to said outboard section of said plate at their upper ends, respective propeller housing means affixed to the lower ends of said steering members each carrying a propeller thereon, propeller drive shafts journaled within said steering members in a coaxial relation therewith and geared to said propellers for counter rotative operation thereof relative to one another, pulley means on the upper ends of said propeller drive shafts, a pair of belt members each trained around a respective driving pulley and pulley means, chain and sprocket means interconnected with said steering members for pivoting them as a unit and causing both of said propellers to pivot in a plane passing through both propeller axes, transom clamp means connected with said apparatus and detachable therefrom upon pivoting of said propeller housing means upwardly with respect thereto, transmission gear means adapted for coupling to the main drive shaft of an inboard engine, and universal means coupling said transmission gear means and said auxiliary drive shaft for transmitting driving power to said propulsion apparatus.

9. Outboard propulsion apparatus for use with an in-board marine engine comprising a main plate adapted for spanning the transom of a boat and having an inboard section and an outboard section, an upright auxiliary drive shaft journaled to said main plate in said inboard section and extending therethrough to provide an upper portion and a lower portion of said shaft, a pair of driving pulleys affixed to said shaft on said upper portion, a pair of laterally spaced depending hollow tubular steering members journaled to said outboard section of said plate at their upper ends, respective propeller housing means affixed to the lower ends of said steering members each carrying a propeller thereon, propeller drive shafts journaled within said steering members in a coaxial relation therewith and geared at their lower ends to said propellers for counter rotative operation thereof relative to one another, the upper ends of said propeller drive shafts extending above said main plate, pulley means on the upper ends of said propeller drive shafts, a pair of belt members each trained around a respective driving pulley and pulley means, chain and sprocket means interconnected with said steering members for pivoting them as a unit and causing both of said propellers to pivot in a plane passing through both propeller axes, transom clamp means connected with said apparatus and detachable therefrom upon pivoting of said propeller housing means upwardly with respect thereto, transmission gear means adapted for coupling to the main drive shaft of an inboard engine and having a right angle take-off, and universal means coupling said take-off and said lower portion of said auxiliary drive shaft for transmitting driving power to said propulsion apparatus.

10. In combination with an inboard marine engine within a motor boat, pulley and belt means overlying the transom of said boat, a pair of laterally spaced outboard propeller drive shafts coupled to said pulley and belt means, a housing enclosing said pulley and belt means and said propeller drive shafts, said housing detachably secured to said transom, a propeller and propeller gear assembly disposed at the lower ends of each of said propeller drive shafts, said propellers having opposite pitch and geared to counter-rotate with respect to one another, universally connected intermediate drive shaft means inboard said boat for transmitting power from said engine to said pulley and belt means thence to said propellers, said pulley and belt means removably attached to

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said intermediate drive shaft means such that the point of attachment provides an axis about which said housing may pivot outwardly from said transom, and steering means interconnecting said propellers for pivoting said propellers through identical angles about the longitudinal axis of each of said drive shafts.

11. An outboard propulsion apparatus for a boat having an inboard motor and inboard drive shaft comprising an upper housing portion adapted to be detachably secured over the transom of a boat, a pair of propeller drive shaft housings extending downwardly from said upper housing portion, a propeller drive shaft enclosed within each of said propeller drive shaft housings, a propeller and propeller gear assembly disposed at the lower end of each of said propeller drive shafts, each of said propellers geared to counter-rotate with respect to each other, first means enclosed within said upper housing portion for transmitting power to said propeller drive shafts, second means adapted to be secured inboard said boat for transmitting power at substantially a right angle from said inboard drive shaft to said first means, said first means detachably connected to said second means, and steering means adapted to pivot said propellers and said propeller gear assemblies as a unit about the longitudinal axis of each of said propeller drive shafts.

12. An outboard propulsion apparatus for a boat having an inboard motor and inboard drive shaft comprising a housing portion adapted to be detachably secured over the transom of a boat, a pair of laterally spaced outboard propeller drive shaft housings extending downwardly from said upper housing portion, a propeller drive shaft enclosed within each of said propeller drive shaft housings, a propeller and propeller gear assembly disposed at the lower end of each of said propeller drive shafts, each of said propellers geared to counter-rotate with respect to the other, pulley and belt means enclosed within said upper housing portion for transmitting power to said propeller drive shafts, universally connected intermediate

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drive shaft means adapted to be disposed inboard said boat for transmitting power from said inboard drive shaft to said pulley and belt means, and steering means interconnecting said propellers for pivoting said propellers as a unit about the longitudinal axis of each of said drive shafts.

13. An outboard propulsion apparatus for a boat having an inboard motor and inboard drive shaft comprising a portable attachment adapted to be detachably secured to the transom of a boat, an upwardly extending drive shaft adapted for disposition inboard said boat, and a right angle transmission assembly for transmitting power from said inboard drive shaft to said upwardly extending drive shaft, said portable outboard attachment including an upper housing portion adapted to overlie said transom, two laterally spaced outboard propeller drive shaft housings extending downwardly from said upper housing portion, a propeller drive shaft enclosed within each of said propeller drive shaft housings, a propeller and a propeller gear assembly connected to the lower end of each of said propeller drive shafts, each of said propellers geared to counter-rotate with respect to the other, pulley and belt means enclosed within said upper housing portion for transmitting power from said upwardly extending drive shaft to said propeller drive shafts, said pulley and belt means removably attached to said upwardly extending drive shaft such that the point of attachment provides an axis about which said outboard attachment may pivot outwardly from said transom, and steering means interconnecting said propellers for turning the same through identical angles about the longitudinal axis of each of said propeller drive shafts.

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