This invention is directed toward a steering device that can be used by a water skier or wakeboarder to remotely control a personal watercraft the user is riding behind. The invention has two steering cables that are attached to the two handles, thereby allowing a user to "steer" the PWC merely by pulling on one side or the other of the tow rope. Because the invention can be used on a standard personal watercraft, there is no reason to spend money on a separate, and expensive, personal watercraft that is unusable other than as a tow vehicle.
SINGLE PERSON STEERING DEVICE FOR USE WITH PERSONAL WATERCRAFT

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This utility patent application claims priority back to U.S. Provisional Application No. 62/022,338, filed Jul. 9, 2014, a copy of which is attached to the application and the contents of which are incorporated by reference.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] This invention was not federally sponsored.

BACKGROUND OF THE INVENTION

Field of the Invention

[0003] This invention relates to the general field of physical rope control devices, and more specifically to a control device for personal watercraft (PWC). Disclosed in this patent application is a tow rope invention usable by a water skier or wakeboarder that has two ropes, with one rope attached to each steering handle, such that a water skier or wakeboarder (or anyone else desiring to ride behind a PWC), can control the PWC without requiring a second person to pilot the PWC.

[0004] Quickly after the first “Jet Ski”® was invented back in the 1960’s, water skiers realized that they could waterski behind a personal watercraft (PWC) just as easily as behind a traditional waterski boat. The advantages of riding behind a PWC were substantial, as they were less expensive than the gas-guzzling waterski boats, required less hassle getting into and out of the water, and were usable in shallower water than were traditional waterski boats.

[0005] In the 1980’s, wakeboarding became a popular sport. Wakeboarding takes a board similar to the snowboard and uses it to “surf” and perform stunts on the wake of a boat or PWC. Just as water skiers, many wakeboarders quickly gravitated to the PWC as the tow vehicle of choice.

[0006] While PWC’s offer a number of advantages over traditional waterski boats, one fact remained true: no matter what type of vehicle you used to tow a water skier or wakeboarder, you need a minimum of two people: one to drive the tow boat and one to have the fun on the water. When water skiing or wakeboarding, the tow driver becomes experienced enough to competently tow a rider, so that driver would in most cases rather be doing the water skiing or wakeboarding than being the chauffeur.

[0007] Thus, it has long been recognized that it would be desirable to create a means by which the water skier or wakeboarder could control the PWC so that having fun behind a PWC did not necessarily require someone sitting in the PWC doing the driving.

[0008] Toward that end, a robotic “tow vehicle” was invented. As memorialized in U.S. Pat. Nos. 8,998,664 and 8,465,333 to Sells (collectively, the “Sells Patents”). The Sells Patents disclose an extremely complicated (and expensive) invention that basically requires at rider-less boat to be controllable with complex electronic communications from a hand-held control device attached to the rider-less boat by a single cable. The complexity of Sells’ invention can be gleaned from a simple reading of one of the four claims of his patents—and from the cost of one of his inventions—$38,000 according to industry articles. Since an “average” personal watercraft can cost well under $10,000, apparently Sells’ invention is tailored for someone who is willing to replace a driver for around $20,000. This simple math obviously leaves a huge gap in the prior art for a) a device that can replace a driver for less than $20,000, and b) a device that can be used on a standard PWC (so that the user can also use the PWC for other uses, such as touring, wave jumping, etc.) rather than having to buy a rider-less boat that is useful only for towing a rider.

[0009] The current invention provides a major improvement over the prior art by having a standard tow rope handle with two ropes coming off the two ends. Each rope goes through an eye-hook on the two sides of the PWC, and clips onto each hand grip on the PWC. Thus, as the user pulls back on the right side of the handle, the right rope pulls back on the right hand grip of the PWC, and this steers the PWC to the right, just as if a driver on the PWC pulled back on the right hand grip.

[0010] Additional controls of the invention include a kill switch, an on/off switch, and a throttle control. The kill switch operates to cut off the engine in the event that the rider loses control and falls into the water. The on/off switch allows the rider to remotely operate the mechanism that turns on and turns off the PWC. The throttle control allows the rider to remotely control how fast the PWC runs.

OBJECTS OF THE INVENTION

[0011] It is therefore an object of the present invention to provide a control device that can be used by a water skier, wakeboarder, or other sportsperson desiring to ride behind a PWC to control the PWC through the control device without the necessity of relying on a second person to drive the PWC.

[0012] A second object of the invention is to provide an inexpensive means to allow a water skier, wakeboarder or other sportsperson desiring to ride behind a PWC to be able to control a standard PWC, as opposed to buying a separate PWC manufactured solely as a “tow-boat”, where the “tow-boat” cannot be used for traditional PWC activities that allow a user to ride the PWC.

[0013] A third object of the invention is to provide a means of remotely controlling a PWC where the means of remote control does not require any complex (and expensive) electromechanical devices to be installed in the PWC.

[0014] There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof may be better understood, and in order that the present contribution to the art may be better appreciated. There are additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto. The features listed herein and other features, aspects and advantages of the present invention will become better understood with reference to the following description and appended claims. The accompanying drawings, which are incorporated in and constitute part of this specification, illustrate embodiments of the invention and, together with the description, serve to explain the principles of the invention.

[0015] It should be understood the while the preferred embodiments of the invention are described in some detail herein, the present disclosure is made by way of example only and that variations and changes thereto are possible without departing from the subject matter coming within the scope of
the following claims, and a reasonable equivalency thereof, which claims I regard as my invention.

BRIEF DESCRIPTION OF THE FIGURES

[0016] One preferred form of the invention will now be described with reference to the accompanying drawings.

[0017] FIG. 1 is a top view of a PWC control device according to a preferred form of the invention being used to make a right turn.

[0018] FIG. 2 is top view of the PWC control device being used to make a left turn.

[0019] FIG. 3 is a top view of the PWC control device showing how the kill switch line operates.

[0020] FIG. 4 is a top view showing the location of the transmitter receiver.

DETAILED DESCRIPTION OF THE FIGURES

[0021] Many aspects of the invention can be better understood with references made to the drawings below. The components in the drawings are not necessarily drawn to scale. Instead, emphasis is placed upon clearly illustrating the components of the present invention. Moreover, like reference numerals designate corresponding parts through the several views in the drawings. Before explaining at least one embodiment of the invention, it is to be understood that the embodiments of the invention are not limited in their application to the details of construction and to the arrangement of the components set forth in the following description or illustrated in the drawings. The embodiments of the invention are capable of being practiced and carried out in various ways. In addition, the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.

[0022] Reference numbers used:

[0023] 1. PWC (generally)

[0024] 2. PWC handlebars (generally)

[0025] 2A. Left handlebar of PWC

[0026] 2B. Right handlebar of PWC

[0027] 3. Pulleys (often standard issue on PWC’s, but can be added if necessary).

[0028] 4A. Left tow rope.

[0029] 4B. Right tow rope.


[0031] 5A. Kill switch on PWC.

[0032] 5B. Life Jacket of user.

[0033] 6. Tow bar


[0035] 8. Transmitter

[0036] 20. Transmitter Receiver on PWC.

[0037] 30. Right turn.

[0038] 40. Left turn.

[0039] FIG. 1 is a top view of a PWC control device according to a preferred form of the invention making a right turn, and FIG. 2 is a top view of a PWC making a left turn. A PWC (generally referenced as 1) has handlebars (generally referenced as 2), including a left handlebar (2A) and a right handlebar (2B), which are used by a rider of the PWC to steer it, pulling back on the right handlebar (2B) to make a right turn, and pulling back on the left handlebar (2A) to make a left turn. The PWC also has a kill switch (5A), which has a key that needs to be inserted into a slot, where the key is attached to the wrist or another part of the rider, such that should the rider fall off the PWC, the key is yanked out of the slot, thereby stopping the engine. The PWC also has two pulleys (3) on either side of the rear of the PWC. These are often standard issue on PWC’s but can be added if necessary.

[0040] FIG. 1 is a top view of the PWC control device being used to make a right turn. The users in this figure has pulled back on the left side of the curved handle (7), causing the left side of the tow bar (6) to “pull back” on the left tow rope (4A), which in turn “pulls back” on the left handlebar (2A), causing the PWC to veer to the right, in direction 30. It should be noted that by this simple “rope and pulley” arrangement, the direction control that is taught by the Sells’ Patents is greatly improved upon as the current invention does not require a specially manufactured “tow-boat” with complex electromechanical features to control the tow-boat, and allows the owner of a common, off-the-shelf PWC to use that PWC as a tow boat rather than requiring the user to purchase and entirely new unit—particularly one that cannot be used for any purpose other than towing a water skier or wakeboader.

[0041] FIG. 2 is top view of the PWC control device being used to make a left turn. The user has pulled back on the right side of the curved handle (7), causing the right side of the tow bar (6) to move backwards. This movement is transferred to the right handlebar (2B) by the right tow rope (4B). As the right handlebar (2B) of the PWC is pulled back, the PWC veers to the left, in direction 40.

[0042] The invention comprises a tow bar (6) with a curved handle (7), very similar to a standard waterski or wakeboard tow rope. The tow bar (6) keeps the ends of the curved handle apart, and the curved handle (7) gives the user a comfortable grip. But, rather than have the single line found in the prior art, this invention has two separate ropes: 4A is a left rope connecting the left side of the tow bar (6) to the left handlebar (2A); 4B is a right rope connecting the right side of the tow bar (6) to the right handlebar (2B). Both the left rope (4A) and the right rope (4B) are threaded through the pulleys (3), such that as the rider pulls back on one side of the handlebar unit (2), the corresponding individual handlebar is also pulled back, thereby making a turn to that side of the PWC.

[0043] FIG. 3 is a top view of the PWC control device showing how the kill switch line operates and the location of the transmitter. The invention has a kill switch line (5) that connects a key place into the kill switch slot (5A) on the PWC to a clip (5B) that is attached to the user’s life jacket. When a user falls off the PWC, the kill switch line pulls the key out of the kill switch slot (5A), thereby “killing” the engine. This accomplishes two purposes: first, it prevents an uncontrolled PWC from continuing moving at high speeds; second, it stops the PWC, allowing the rider to easily swim to the PWC and reset the kill switch, thereby allowing for more use. As with the steering mechanism, the current invention greatly improves upon the prior art by removing the need for a complex electromechanical connection between the user and the kill switch.

[0044] The tow bar (6) also has a transmitter (8), section, in which the throttle control and a start/stop mechanism is located. The transmitter is waterproof and allows the user to start the PWC and control its speed during the user’s run, and finally to turn off the PWC once the user desires to stop. There are several alternative embodiments of the transmitter. In one embodiment, the transmitter is turned on when the kill switch is connected to the rider’s life jacket or personal flotation device (PFD), and turned off upon the breaking of this con-
The rider controls the throttle through the transmitter. There are several different ways this can be accomplished. First, the throttle control could be an adjustable slider on the transmitter by which a rider could “slide up” for greater speed and “slide down” for lesser speed. A second embodiment could be to have an on/off button that would be separate from the kill switch, with either the aforementioned “slider” control, or a pre-programmed throttle curve set so that the rider would just push one button after starting the unit and the throttle would gradually increase to the perfect speed. Alternatively, the throttle control could be a set of buttons, each with a pre-set (or adjustable) speed, by which the rider could select the appropriate speed by merely pushing a button.

FIG. 4 is a top view showing the location of the transmitter receiver. The transmitter receiver, 20, receives signals from the transmitter (not shown in the figure), which regulate the on-off functions as well as controlling the throttle. The transmitter receiver can be removable attached through any known method to the right hand grip 2B, which is the throttle control, of a PWC.

It should be understood that while the preferred embodiments of the invention are described in some detail herein, the present disclosure is made by way of example only and that variations and changes thereto are possible within the scope of the following claims, and a reasonable equivalency thereof, which claims I regard as my invention.

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That which is claimed:

1. A device for controlling a PWC, where the PWC has a bow and a stern, and a right side and a left side, an engine, and right handlebar and a left handlebar, and a kill switch slot and a kill switch key, where the kill switch key must be in the kill switch slot for the engine to run, comprising: a tow bar, a curved handle, a left tow rope, a right tow rope, two pulleys, a right pulley and a left pulley, two connectors, a right connector and a left connector, a kill switch line, which additionally comprises a key connector and a PFD connector, where the curved handle has a right end and a left end and the tow bar has a right end and a left end, and where the right end of the curved handle is attached to the right end of the tow bar, and where the left end of the curved handle is attached to the left end of the tow bar, and where the right tow rope has a user end and a PWC end, and the left tow rope has a user end and a PWC end, and where the right user end is attached to the right end of the two rope, and where the left user end is attached to the left end of the tow rope, where the PWC end of the right tow rope is attached to the right connector, and where the right connector is attached to the right handlebar of the PWC, and where the right pulley is attached to the PWC at the right side at the stern, and there where left pulley is attached to the PWC at the left side at the stern, and where the right tow rope is threaded through the right pulley and where the left tow rope is threaded through the left pulley, such that as the user pulls back on the right end of the curved handle, the right tow rope is retracted, causing the right handlebar of the PWC to pull back, thereby creating a right turn, and such that as the user pulls back on the left end of the curved handle, the left tow rope is retracted causing the left handlebar of the PWC to pull back, thereby creating a left turn, such that the use can modify a direction of the PWC by pulling back on either the right end of the curved handle of the left end of the curved handle, and where the kill switch line has two ends, a key end and a PFD end, and were the key end additionally comprises a key connector, where the key connector comprises a key clip which attaches to the key of a PWC, and where the PFC end comprises a PFC clip which attaches to a PFC worn by the user of the invention, such that when a user falls off the PWC, the kill switch line is pulled back, thereby pulling back on the key clip, thereby removing the key of the PWC from the key slot, thereby stopping the engine of the PWC.

2. The device of claim 1, additionally comprising a transmitter, where the transmitter is located in the tow bar, and where the transmitter transmits an on-off signal and a throttle signal, and additionally comprising a transmitter receiver, where the transmitter receiver can be removable attached to a PWC, and where the transmitter receiver receives the on-off signal from the transmitter, and causes the PWC to turn on and turn off, and where the transmitter receiver receives the throttle signal from the transmitter and adjusts a throttle of the PWC.

3. The device of claim 2, where the throttle control comprises a “slider control” which sends a variable signal to PWC, where the slider control has a “high end” and a “low end”, where when the rider adjusts to the slider control to the “high end” the PWC moves at a higher speed than when the rider adjusts the slider control to the “low end”.

4. The device of claim 2, where the throttle control comprises a plurality of “speed buttons”, where each speed button is set to a different speed, and each speed button sends a signal to the PWC, that causes the PWC to move at a different speed, and the rider adjusts the speed of the PWC by pressing one of the plurality of speed buttons, and additionally comprising two pulleys, where one of each of the two pulleys is attached to a right, stern section of the PWC and one of each of the two pulleys is attached to a left, stern section of the PWC.

5. A device for controlling a PWC, where the PWC has a bow and a stern, and a right side and a left side, an engine, and right handlebar and a left handlebar, and a kill switch slot and a kill switch key, where the kill switch key must be in the kill switch slot for the engine to run, comprising: a tow bar, with a right tow bar end and a left tow bar end, a right tow rope, a right tow rope, two pulleys, a right pulley and a left pulley, two connectors, a right connector and a left connector, and where the right tow rope has a user end and a PWC end, and the left tow rope has a user end and a PWC end, and the right user end is attached to the right end of the tow rope, and where the left user end is attached to the left end of the tow rope, where the PWC end of the right tow rope is attached to the right connector, and where the left connector is attached to the left handlebar of the PWC, and where the right pulley is attached to the PWC at the right side at the stern, and where left pulley is attached to the PWC at the left side of the stern, and where the right tow rope is threaded through the right pulley and where the left tow rope is threaded through the left pulley, such that as the user pulls back on the right end of the curved handle, the right tow rope is retracted, causing the right handlebar of the PWC to pull back, thereby creating a right turn, and such that as the user pulls back on the left end of the curved handle, the left tow rope is retracted causing the left handlebar of the PWC to pull back, thereby creating a left turn, such that the use can modify a direction of the PWC by pulling back on either the right end of the curved handle of the left end of the curved handle, and where the kill switch line has two ends, a key end and a PFD end, and were the key end additionally comprises a key connector, where the key connector comprises a key clip which attaches to the key of a PWC, and where the PFC end comprises a PFC clip which attaches to a PFC worn by the user of the invention, such that when a user falls off the PWC, the kill switch line is pulled back, thereby pulling back on the key clip, thereby removing the key of the PWC from the key slot, thereby stopping the engine of the PWC.
bar of the PWC, and where the PWC end of the left tow rope is attached to the left connector, and where the left connector is attached to the left handlebar of the PWC, and where the right pulley is attached to the PWC at the right side at the stern, and where left pulley is attached to the PWC at the left side at the stern, and where the right tow rope is threaded through the right pulley and where the left two rope is threaded through the left pulley;

such that as the user pulls back on the right tow bar end, the right tow rope is retracted, causing the right handlebar of the PWC to pull back, thereby creating a right turn, an such that as the user pulls back on the left tow bar end, the left tow rope is retracted, causing the left handlebar of the PWC to pull back, thereby creating a left turn, such that the use can modify a direction of the PWC by pulling back on either the right tow bar end or the left tow bar end.

6. The device of claim 5, additionally comprising a curved handle,

where, the curved handle has a right end and a left end and where the right end of the curved handle is attached to the right tow bar end, and where the left end of the curved handle is attached to the left tow bar end.

7. The device of claim 6, where the curved handle is attached to the tow bar, and,

such that as the user pulls back on the right end of the curved handle, the right tow rope is retracted, causing the right handlebar of the PWC to pull back, thereby creating a right turn, an such that as the user pulls back on the left end of the curved handle, the left tow rope is retracted, causing the left handlebar of the PWC to pull back, thereby creating a left turn, such that the use can modify a direction of the PWC by pulling back on either the right end of the curved handle of the left end of the curved handle.

8. The device of claim 7, additionally comprising a kill switch line, which additionally comprises a key connector and a PFD connector.

9. The device of claim 8, where, the kill switch line has two ends, a key end and a PFD end, and where the key end additionally comprises the key connector, where the kill switch line comprises a key clip which attaches to the key of a PWC, and where the PFC end comprises a PFC clip which attaches to a PFC worn by the user of the invention, such that when a user falls off the PWC, the kill switch line is pulled back, thereby pulling back on the key clip, thereby removing the key of the PWC from the key slot, thereby stopping the engine of the PWC.

10. The device of claim 5, additionally comprising a kill switch line, which additionally comprises a key connector and a PFD connector.

11. The device of claim 10, where, the kill switch line has two ends, a key end and a PFD end, and where the key end additionally comprises the key connector, where the kill switch line comprises a key clip which attaches to the key of a PWC, and where the PFC end comprises a PFC clip which attaches to a PFC worn by the user of the invention, such that when a user falls off the PWC, the kill switch line is pulled back, thereby pulling back on the key clip, thereby removing the key of the PWC from the key slot, thereby stopping the engine of the PWC.

12. The device of claim 3, additionally comprising a kill switch line, which additionally comprises a key connector and a PFD connector, where, the kill switch line has two ends, a key end and a PFD end, and were the key end additionally comprises the key connector, where the key connection comprises a key clip which attaches to the key of a PWC, and where the PFC end comprises a PFC clip which attaches to a PFC worn by the user of the invention, such that when a user falls off the PWC, the kill switch line is pulled back, thereby pulling back on the key clip, thereby removing the key of the PWC from the key slot, thereby stopping the engine of the PWC.

13. The device of claim 12, where the throttle control comprises a “slider control” which sends a variable signal to PWC, where the slider control has a “high end” and a “low end”, where when the rider adjusts to the slider control to the “high end” the PWC moves at a higher speed than when the rider adjusts the slider control to the “low end”.

14. The device of claim 12, where the throttle control comprises a plurality of “speed buttons”, where each speed button is set to a different speed, and each speed button sends a signal to the PWC, that causes the PWC to move at a different speed, and the rider adjusts the speed of the PWC by pressing one of the plurality of speed buttons.

15. A device for controlling a PWC, where the PWC has a bow and a stern, and a right side and a left side, an engine, and right handlebar and a left handlebar, and a kill switch slot and a kill switch key, where the kill switch key must be in the kill switch slot for the engine to run, comprising: a tow bar, a curved handle, a left tow rope, a right tow rope, two pulleys, a right pulley and a left pulley, two connectors, a right connector and a left connector, a kill switch line, which additionally comprises a key connector and a PFD connector, and a transmitter,

where, the curved handle has a right end and a left end and the tow bar has a right end and a left end, and where the right end of the curved handle is attached to the right end of the tow bar, and where the left end of the curved handle is attached to the left end of the tow bar, and where the right tow rope has a user end and a PWC end, and the left tow rope has a user end and a PWC end, and where the right user end is attached to the right end of the tow rope, and where the left user end is attached to the left end of the tow rope, and where the PWC end of the right tow rope is attached to the right connector, and where the right connector is attached to the right handlebar of the PWC, where the PWC end of the left tow rope is attached to the left connector, and where the left connector is attached to the left handlebar of the PWC, and where the right pulley is attached to the PWC at the right side at the stern, and where left pulley is attached to the PWC at the left side at the stern, and where the right tow rope is threaded through the right pulley and where the left two rope is threaded through the left pulley,

such that as the user pulls back on the right end of the curved handle, the right tow rope is retracted, causing the right handlebar of the PWC to pull back, thereby...
creating a right turn, an such that as the user pulls back on the left end of the curved handle, the left tow rope is retracted, causing the left handlebar of the PWC to pull back, thereby creating a left turn, such that the use can modify a direction of the PWC by pulling back on either the right end of the curved handle or the left end of the curved handle,

and where the kill switch line has two ends, a key end and a PFD end, and were the key end additionally comprises the key connector, where the key connection comprises a key clip which attaches to the key of a PWC, and where the PFC end comprises a PFC clip which attaches to a PFC worn by the user of the invention, such that when a user falls off the PWC, the kill switch line is pulled back, thereby pulling back on the key clip, thereby removing the key of the PWC from the key slot, thereby stopping the engine of the PWC, and where the transmitter additionally comprises on/off switch, where the on/off switch transmits a signal to the on/off switch on the PWC to turn the PWC “on” or “off” depending on the desires of the rider.

16. The device of claim 15, where the transmitter additionally comprises a throttle control.

17. The device of claim 16, where the throttle control comprises a “slider control” which sends a variable signal to PWC, where the slider control has a “high end” and a “low end”, where when the rider adjusts to the slider control to the “high end” the PWC moves at a higher speed than when the rider adjusts the slider control to the “low end”.

18. The device of claim 17, where the “slider control” additionally comprises a locking device that allows a user to “lock” the throttle control at a certain level of power.

19. The device of claim 16, where the throttle control comprises a plurality of “speed buttons”, where each speed button is set to a different speed, and each speed button sends a signal to the PWC, that causes the PWC to move at a different speed, and the rider adjusts the speed of the PWC by pressing one of the plurality of speed buttons.

20. The device of claim 19, where each of the plurality of “speed buttons” can be programmed to a specific speed by the user of the invention.

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