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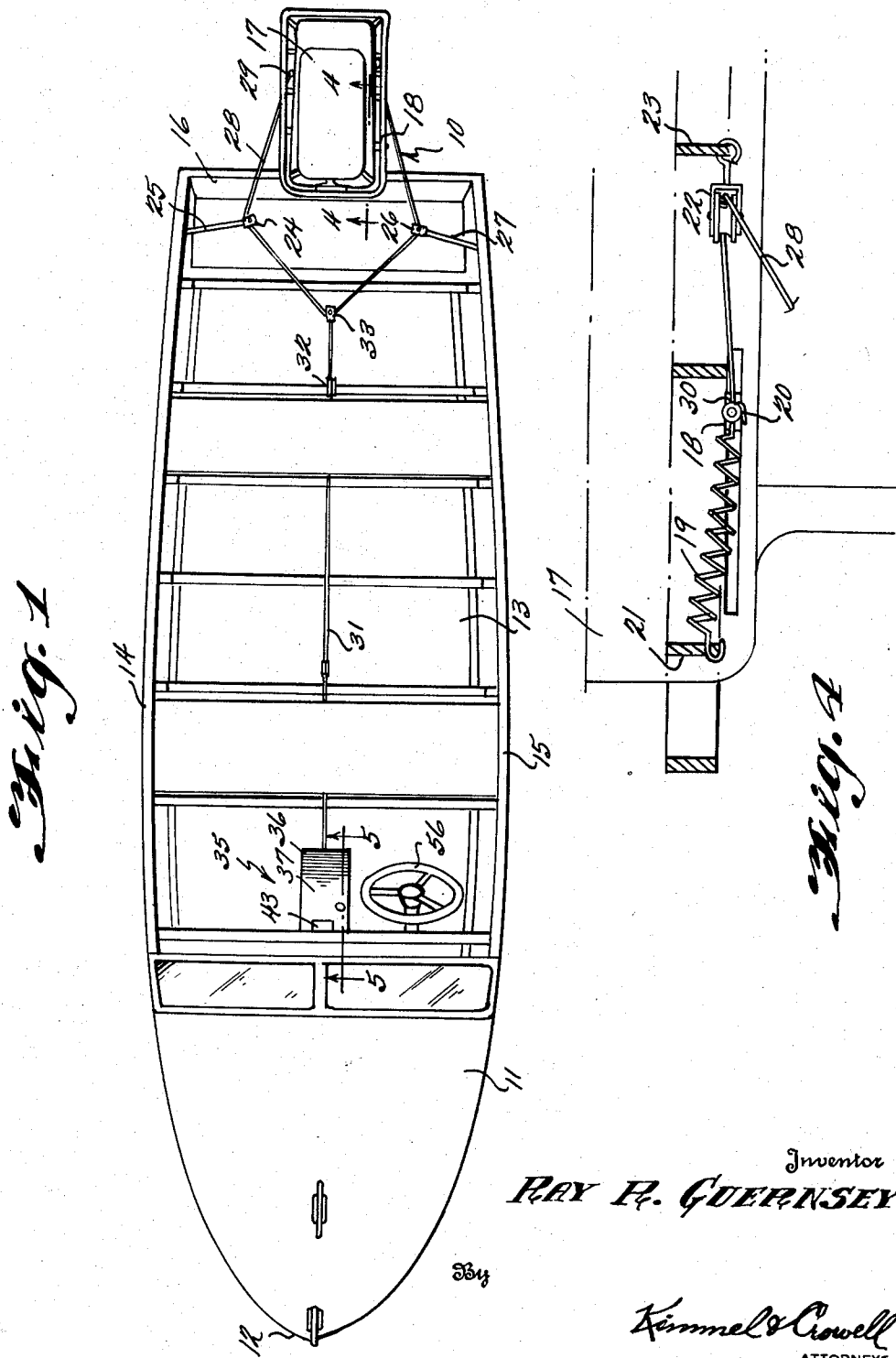
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**2,947,193**

# THROTTLE CONTROL FOR OUTBOARD MOTORS

Filed Aug. 25, 1959

3 Sheets-Sheet 1



Aug. 2, 1960

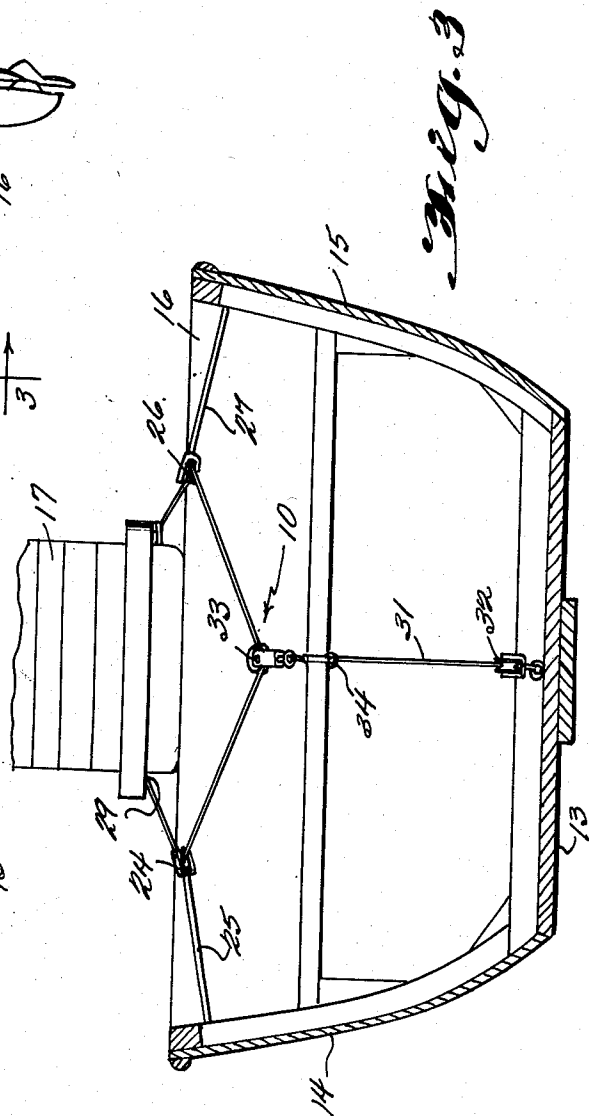
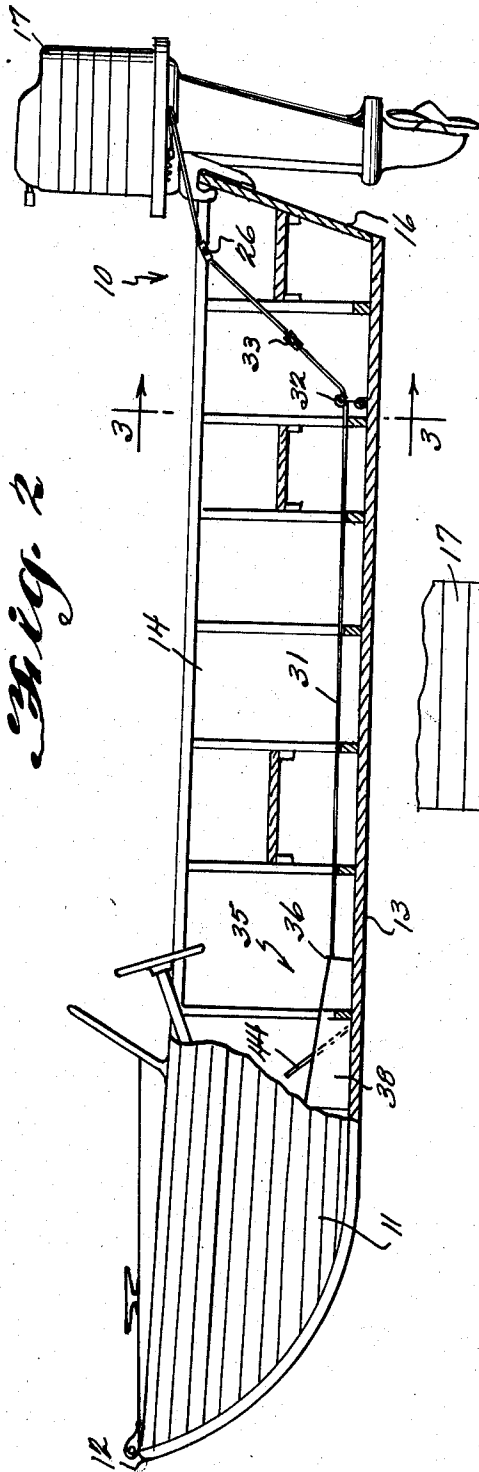
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THROTTLE CONTROL FOR OUTBOARD MOTORS

Filed Aug. 25, 1959

3 Sheets-Sheet 2



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THROTTLE CONTROL FOR OUTBOARD MOTORS

Filed Aug. 25, 1959

3 Sheets-Sheet 3

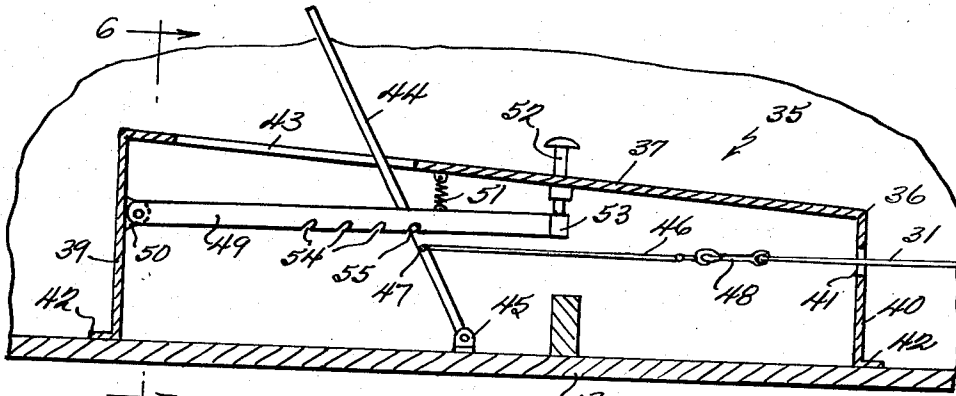


Fig. 5

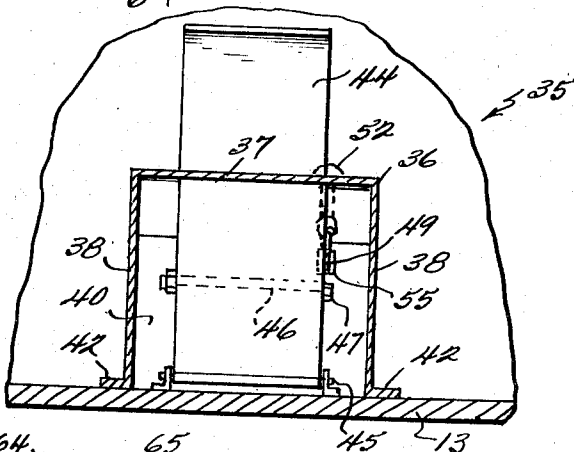


Fig. 6

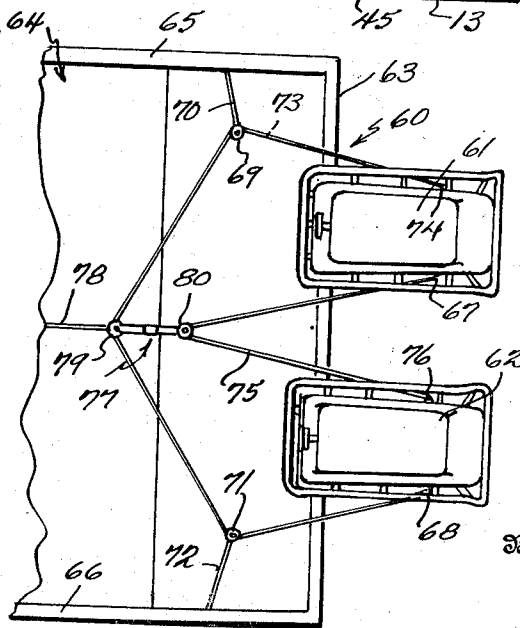


Fig. 7

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## THROTTLE CONTROL FOR OUTBOARD MOTORS

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Filed Aug. 25, 1959, Ser. No. 836,028

2 Claims. (Cl. 74-479)

The present invention relates to a throttle control for outboard motors, and particularly to a remotely actuated control.

The primary object of the invention is to provide an outboard motor foot throttle control with instant response to improve both the safety and pleasure of outboard motoring, which permits the outboard motor to be steered without changing the throttle setting.

Another object of the invention is to provide an outboard motor throttle control of the class described above in which the throttle is opened by means of a flexible cable and closed by a spring.

A further object of the invention is to provide an outboard motor throttle control of the class described above which can be installed on an outboard motor without modifying the same and with a minimum of additions thereto.

A still further object of the invention is to provide an outboard motor throttle control for boats of the class described above in which foot actuated means is provided for maintaining the throttle in a desired setting.

Other objects and advantages will become apparent in the following specification when considered in light of the attached drawings, in which:

Figure 1 is a top plan view of the invention shown installed on a boat;

Figure 2 is a side elevation of the invention with the boat shown partially broken away and in section for convenience of illustration;

Figure 3 is an enlarged fragmentary transverse sectional view taken along the line 3-3 of Figure 2, looking in the direction of the arrows;

Figure 4 is a grossly enlarged fragmentary longitudinal section taken along the line 4-4 of Figure 1, looking in the direction of the arrows;

Figure 5 is an enlarged fragmentary longitudinal section taken along the line 5-5 of Figure 1, looking in the direction of the arrows;

Figure 6 is a fragmentary transverse sectional view taken along the line 6-6 of Figure 5, looking in the direction of the arrows; and

Figure 7 is a fragmentary top plan view of a modified form of the invention.

Referring now to the drawings in detail wherein like reference characters indicate like parts throughout the several figures, the reference numeral 10 indicates generally a throttle control system for outboard motor powered boats.

The throttle control system 10 is illustrated in use on a boat 11 of the type having a bow 12, bottom 13, opposed sides 14, 15 and a transom 16. A conventional outboard motor 17 is conventionally mounted on the transom 16 and is adapted to be rotated about a vertical axis by conventional means when steering the boat 11. The outboard motor 17 has a throttle control lever 18 forming a part thereof and extending outwardly from one side thereof. A spring 19 has one end secured to the throttle control lever 18 at 20 and the opposite end se-

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cured to a bracket 21 on the outboard motor 17. The throttle control lever 18 is normally biased by the spring 19 forwardly of the outboard motor 17 to the left, as viewed in Figure 4. The forward movement of the lever 18 reduces the throttle setting of the outboard motor 17 to decrease the speed of the boat 11, while movement of the throttle lever 18 toward the rear of the outboard motor 17 will increase the throttle setting thereof and increase the speed of the boat 11.

A swivel pulley 22 is mounted on a bracket 23 on the outboard motor 17 rearwardly of the throttle lever 18 and in general horizontal alignment therewith. A swivel pulley 24 is secured to the side 14 of the boat 11 adjacent the transom 16 and is spaced inwardly from the side 14 of the boat 11 by means of an arm 25. A second pulley 26 is secured to the side 15 of the boat 11 adjacent to and forwardly of the transom 16 and is spaced inwardly from the side 15 by means of an arm 27. The swivel pulleys 24, 26 are positioned forwardly and below the swivel pulley 22, as can be clearly seen in Figures 2 and 3. A flexible cable loop 28 has one end anchored at 29 on the side of the motor 17 opposite the pulley 22. The cable loop 28 is trained over the pulley 24, the pulley 26 and the pulley 22, having its opposite end 30 secured to the throttle lever 18. The cable loop 28 passes through the swivel pulleys 24, 26 on turning movement of the motor 17 without affecting the setting of the throttle lever 18.

A longitudinally extending control cable 31 extends along the bottom 13 of the boat 11 and is trained under a swivel pulley 32 secured to the bottom 13 adjacent to but spaced forwardly of the transom 16. The swivel pulley 32 is spaced forwardly of the swivel pulleys 24, 26 and is positioned intermediate the sides 14, 15. A swivel pulley 33 has the cable loop 28 trained thereover intermediate the swivel pulleys 24, 26. The swivel pulley 33 is secured to the end 34 of the control cable 31 so that forward movement of the control cable 31 will pull forwardly on the cable loop 28 and through the swivel pulley 22 will pull rearwardly on the throttle lever 18. Upon release of the forward pressure on the control cable 31, the spring 19 will return the throttle lever 18 to closed position.

A foot control, generally indicated at 35, is positioned at the forward end of the boat 11 supported on the bottom 13 thereof. The foot control 35 includes a box 36 having a forwardly and upwardly sloping top wall 37, a pair of spaced parallel side walls 38, a front wall 39 and a rear wall 40. The control cable 31 extends forwardly through an opening 41 in the rear wall 40. The side walls 38, front wall 39 and rear wall 40 are each provided with a perpendicularly extending flange 42 on the lower edge thereof by means of which the box 36 is secured to the bottom 13. The top wall 37 has a relatively large generally rectangular opening 43 formed therein intermediate the side walls 38 and adjacent the front wall 39. A foot pedal 44 is arranged in upwardly and forwardly sloping relation projecting through the rectangular opening 43. A hinge 45 is arranged in transversely extending relation to secure the lower end of the foot lever 44 to the bottom 13 of the boat 11 to permit the foot lever 44 to swing downwardly and forwardly with respect thereto.

A generally U-shaped horizontal link 46 is secured to the foot lever 44 by a pivot pin 47 intermediate the hinge 45 and the top wall 37. A swivel connector 48 connects the rear end of the link 46 to the forward end of the control cable 31, as can be seen in Figure 5.

A generally horizontal lock bar 49 is secured to the front wall 39 by a hinge 50 mounting the lock bar 49 for vertical swinging movement. A spring 51 connects the lock bar 49 to the top wall 37 normally urging the lock

bar 49 upwardly toward the top wall 37. A plunger 52 is mounted for vertical sliding movement through the top wall 37 and has its lower end engaging the rear end 53 of the lock bar 49 so that downwardly movement of the plunger 52 will move the rear end 53 of the lock bar 49 away from the top wall 37 against the tension of the spring 51. The lock bar 49 has a plurality of longitudinally spaced upwardly and rearwardly sloping notches 54 which are arranged to selectively engage a detent pin 55 on the side of the foot pedal 44 to maintain the foot pedal 44 in adjusted position.

In the use and operation of the foot control unit 35, the lever 44 is moved by the foot to the desired position to open the throttle lever 18 the required amount. With the foot lever 44 in this position the plunger 52 is depressed with the heel so that an appropriate notch 54 engages the detent pin 55. The pressure on the foot lever 44 is then relieved so that the detent pin 55 will seat completely in the selected notch 54. The pull of the throttle spring 19 is sufficient to hold the foot lever 44 with the detent 55 completely within the notch 54 in which position the lock bar 49 is restrained against upward movement under the influence of the spring 51. The foot lever 44 is then permitted to remain in its position locked by the lock bar 49 until a change in speed of the boat 11 is desired. When changing the speed of the boat 11 the foot lever 44 is depressed slightly to release the selected notch 54 from the detent pin 55 so as to permit the spring 51 to raise the lock bar 49 out of engagement with the detent pin 55. After the lock bar 49 has swung upwardly toward the top wall 37, the foot lever 44 can be moved to any new desired position by applying additional pressure thereto, or releasing the pressure therefrom, and can then be locked in the new position by again depressing the plunger 52.

In the use and operation of the invention, pivotal movement of the motor 17 on its vertical axis under control of the steering wheel 56 causes the cable loop 28 to move through the swivel pulleys 24, 26 and through the swivel pulley 33 while remaining stationary with respect to the swivel pulley 22. Longitudinal movement of the swivel pulley 33 moved by the control cable 31 will cause the cable loop 28 to move through the swivel pulley 22 and to move the throttle lever 18 in accordance therewith, or permit it to be moved by the spring 19 in opposition thereto.

With the control assembly 10 constructed in accordance with the present invention, the need for an expensive bowden wire is eliminated while permitting the use of a freely pivotable foot control which cannot be used with normal Bowden wire installations. It should be understood that while a specific foot control 35 has been illustrated for controlling the movement of the control cable 31, any type of foot control desired may be used in conjunction with the throttle control assembly 10.

In Figure 7 a modified throttle control assembly is generally illustrated at 60 for simultaneously controlling the throttles of dual motors 61, 62. The motors 61, 62 are secured to the transom 63 of a boat 64 by conventional means not shown. The dual motors 61, 62 are connected for simultaneous pivotal steering movement by conventional means (not shown) so as to have equal turning movement in the same direction. The boat 64 has opposed sides 65, 66 extending forwardly from the transom 63.

The motor 61 is provided with a swivel pulley 67 identical to the swivel pulley 22 of the preferred form of the invention and the motor 62 is provided with a swivel pulley 68 also identical to the swivel pulley 22 of the preferred form of the invention. A swivel pulley 69 is secured to the side 65 of the boat 64 in a plane below the swivel pulley 67, 68 and forwardly therefrom. The swivel pulley 69 is mounted on an arm 70 secured to the side 65 of the boat 64. A swivel pulley 71 is positioned adjacent the side 66 and is supported by an arm

72 extending inwardly from the side 66 adjacent the transom 63. The swivel pulley 71 lies in the same horizontal plane with the swivel pulley 69 and is transversely aligned therewith. A cable loop 73 has one end anchored at 74 on the side of the motor 61 opposite the pulley 67. The cable loop 73 is trained over the swivel pulley 69, the swivel pulley 71 and the swivel pulley 68 on the motor 62 extending to the throttle lever (not shown) of the motor 62 in the identical manner that the cable loop 28 connects to the throttle lever 18 in the preferred form of the invention.

A second cable loop 75 has one end anchored at 76 to the side of the motor 62 opposite the swivel pulley 68. The opposite end of the second cable loop 75 is trained over the swivel pulley 67 and is connected to the throttle lever (not shown) of the motor 61 in exactly the same manner as the cable loop 28 is connected to the throttle lever 18 in the preferred form of the invention.

A control unit, generally indicated at 77, is connected for longitudinal movement to a control cable 78 extending forwardly in the boat 64 to a remote actuator (not shown). The control unit 77 has a swivel pulley 79 mounted thereon with the cable loop 73 trained thereover. A second swivel pulley 80 is also mounted on the control unit 77 and has the second cable loop 75 trained thereover so that forward movement of the control unit 77 will cause actuation of the respective throttles of the motors 61, 62 in an equal amount.

The cable loops 73, 75 are freely movable through the swivel pulleys 79, 80, respectively, so that the throttle linkages of the motors 61, 62 will only be moved when the control unit 77 is moved with respect thereto, even during the turning movements of the motors 61, 62.

Having thus described the preferred embodiments of the invention, it should be understood that numerous structural modifications and adaptations may be resorted to without departing from the scope of the appended claims.

What is claimed is:

1. In a boat outboard motor combination a throttle control assembly for said motor comprising a pair of spaced apart swivel pulleys mounted on said boat forwardly of said motor on opposite sides of said motor, a pulley secured to one side of said motor rearwardly of and longitudinally aligned with the throttle of said motor, a cable loop having one end thereof anchored to the side of said motor opposite said last named pulley, said cable loop being trained over said pair of pulleys and said last named pulley with the opposite end thereof connected to said throttle, a control cable extending longitudinally of said boat, a pulley trained over said cable loop connected to said control cable for moving said control cable to actuate said throttle, and resilient means normally biasing said throttle forwardly of said motor away from said pulley mounted on said motor.

2. In a boat and dual outboard motor combination a dual throttle control assembly comprising a pair of transversely aligned oppositely disposed pulleys secured to said boat forwardly of said motors on opposite sides thereof, a swivel pulley secured to the side of each of said motors rearwardly of and longitudinally aligned with the throttle thereof, a first cable loop having one end anchored to the side of one of said motors opposite the throttle of said one motor and opposite said other motor, said first cable loop being trained over said pair of pulleys and over the pulley mounted on said other motor, said first cable loop having the other end thereof secured to the throttle of said other motor, a second cable loop having one end thereof secured to the side of said other motor adjacent said one motor, the other end of said second cable loop being trained over the pulley mounted on said one motor and secured to the throttle of said one motor, a control unit having a swivel pulley engaging each of said cable loops, and means for moving said control unit to simultaneous-

ly move each of said cable loops to simultaneously control each of said throttles, and resilient means normally biasing said throttle forwardly of said motor away from said oppositely disposed pulleys mounted on said motor.

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