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E. McMURRAY ET AL  
BOAT STEERING APPARATUS

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FIG. 1

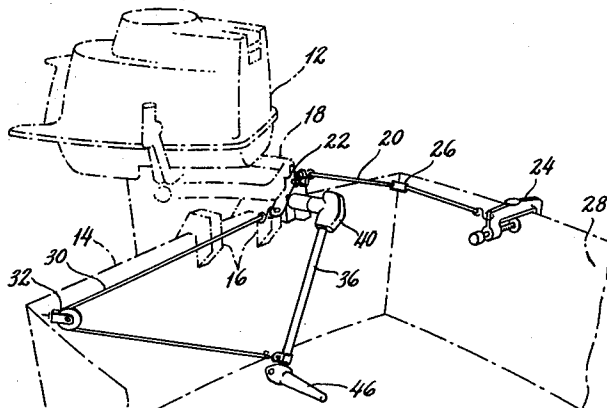


FIG. 2

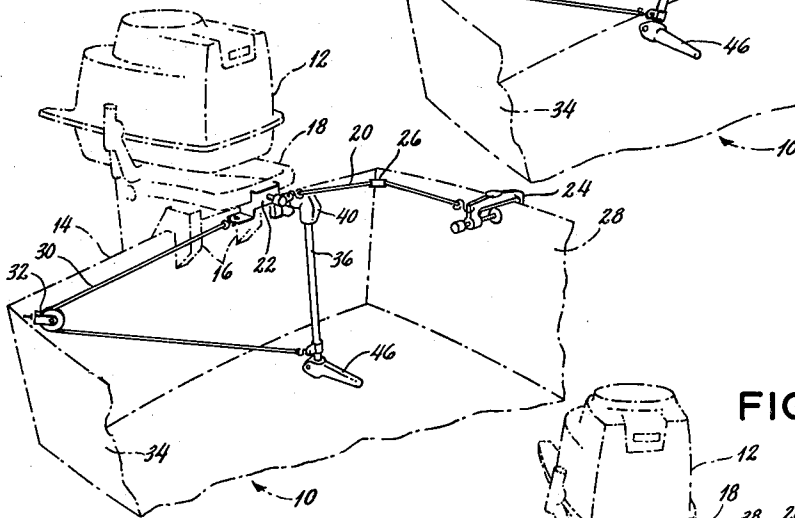


FIG. 3

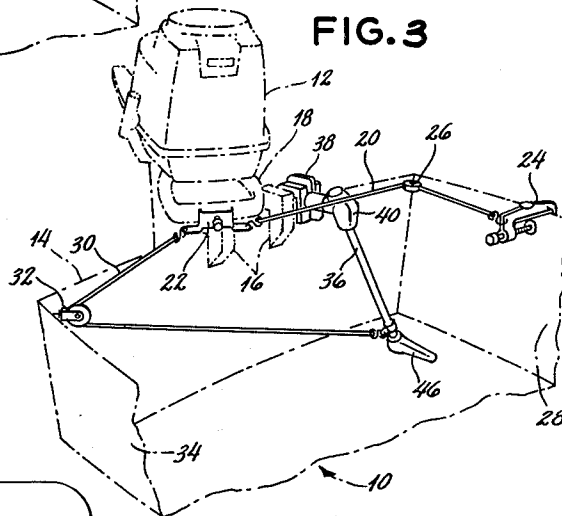
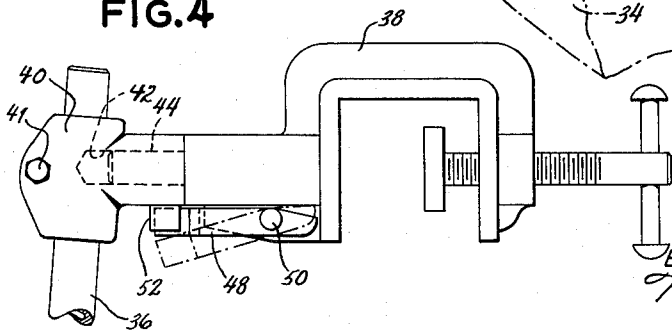


FIG. 4



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## BOAT STEERING APPARATUS

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This invention relates to boat steering apparatus and, more particularly, to foot operable steering apparatus for a small boat having pivotally supported tiller means such as an outboard motor on its stern.

It is the general object of the invention to provide a steering apparatus which is adapted for use with a small boat equipped with a pivotally supported tiller means such as an outboard motor and which may be operated by an occupant of the boat with foot pressure alone leaving the hands of the occupant free for manipulation of a fishing rod or the like.

A more specific object of the invention is to provide foot operable boat steering apparatus of the type mentioned which may be locked in position to provide for automatic straight ahead steering without manipulation by either the hands or feet of an occupant of the boat.

The drawing shows a preferred embodiment of the invention and such embodiment will be described, but it will be understood that various changes may be made from the construction disclosed, and that the drawing and description are not to be construed as defining or limiting the scope of the invention, the claims forming a part of this specification being relied upon for that purpose.

Of the drawing:

FIG. 1 shows a boat equipped with an outboard motor and steering apparatus constructed in accordance with the invention, the motor and apparatus being in position for a right-hand turn of the boat.

FIG. 2 is similar to FIG. 1 but with the motor and steering apparatus in position for straight ahead steering.

FIG. 3 is similar to FIGS. 1 and 2, but shows the motor and steering apparatus in position for a left-hand turn of the boat.

FIG. 4 is an enlarged showing of a clamp and an upper part of a pivotally supported lever forming a portion of the steering apparatus of the invention.

The foot operable steering apparatus of the invention may be employed in any small boat which is adapted to be steered by turning a pivotally supported tiller means on its stern from side to side. The tiller means may take various forms, but in most applications will comprise a pivotally mounted outboard motor which can be utilized to both propel and steer the boat. In general, the steering apparatus comprises an elastic biasing means which is secured to the boat and to the motor or other tiller means and which tends to pivot the same toward one side of the boat. A control cable is secured to the motor and engages a guide secured to the boat in such manner that at least a portion of the cable extends from the motor toward the opposite side of the boat. The control cable is connected to a pivotally supported lever adapted to be pivoted in one direction by foot pressure exerted by an occupant of the boat. When so pivoted, the lever pulls the control cable so as to pull the motor about its pivot toward the said opposite side of the boat against the

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urging of the aforesaid biasing means. When foot pressure on the lever is released, the biasing means operates to pivot the motor toward said one side of the boat pulling the control cable and pivoting the foot lever in an opposite direction. Thus, by manipulation of the lever, the motor may be turned about its pivot as required to steer the boat on a desired course. Straight ahead steering may be automatically accomplished by means of a releasable latch which limits the pivotal movement of the foot lever so as to hold the motor in a central or straight ahead position against the urging of the elastic biasing means.

Referring now to the drawing and particularly to FIGS. 1 to 3, it will be observed that a boat 10 is partially shown therein and is equipped with an outboard motor 12 of a conventional type. The motor 12 is attached to the backboard or transom 14 of the boat 10 by means of a conventional clamping device 16 and may be pivoted bodily from side to side for steering the boat. The motor 12 has a U-shaped bracket or bail 18 and is provided with the usual steering handle or tiller, but the latter element is preferably pivoted upwardly and rearwardly so as to be disposed behind the body of the motor as the latter is illustrated in FIGS. 1 to 3 of the drawing.

The above-mentioned elastic biasing means may take various forms within the scope of the invention. Preferably and as shown, said means comprises an elastic cable 20 which may be formed of rubber with a fabric or plastic covering. The elastic biasing cable 20 is secured at one end to a small bracket 22 which is in turn detachably secured to the bail 18 of the outboard motor. Obviously, in the alternative the said cable may be secured to the steering handle or tiller when the motor has no bail or other convenient attaching means separate from the handle. At its opposite end, the elastic cable 20 is secured to the boat on one side of the motor 12 so as to be continuously in tension. Preferably and as shown, the cable 20 is connected at its opposite end to a quick acting C-clamp 24 and engages a guide 26 which may be a swivel pulley. The C-clamp 24 is secured to the upper edge portion of one sideboard or gunnel 28 of the boat and the pulley 26 is secured to the boat in the corner formed by the said one sideboard or gunnel and the backboard or transom 14. It will be apparent that the elastic cable 20 tends to pivot the outboard motor 12 toward the said one side of the boat and the position shown in FIG. 1 wherein a right-hand turn of the boat is effected.

The aforementioned control cable preferably comprises a flexible cable 30 which is substantially inelastic lengthwise. The said cable is shown secured at one end to the bracket 22 mounted on the bail 18, but may obviously be secured to a steering handle or tiller in the alternative. The cable 30 engages a guide which may take the form of a swivel pulley 32 secured to the boat at the corner joining the transom or backboard 14 with a sideboard or gunnel 34 disposed opposite the sideboard or gunnel 28.

Preferably, the aforementioned pivotally supported lever comprises a generally vertical lever 36 having its upper end pivotally supported on a C-clamp 38 and its lower end adjustably attached to the opposite end of the control cable 30. As best illustrated in FIG. 4, the lever 36 is shown entered adjacent its upper end in a secondary clamp member 40 which has a bore 42 which extends substantially horizontally and receives a pivot pin 44 formed

integrally on the C-clamp 38. The clamp member 40 has a binder screw 41 which may be tightened to hold the lever 36 in selected vertical positions appropriate for boats of various depths on which the apparatus may be mounted. The C-clamp 38 is preferably of a quick acting type and may be secured in various locations on the boat's sideboards or backboard, but is preferably secured to an upper edge portion of the backboard of transom 14 on the same side of the motor as the elastic biasing cable 20.

From the foregoing, it will be apparent that the lever 36 may be pivoted about the pin 44 by foot pressure exerted on a laterally extending stirrup or arm 46 provided at its lower end portion. That is, the lever 36 may be pivoted in one direction (counterclockwise in the drawing) by foot pressure to pull the control cable 30 and thus pull the outboard motor 12 about its pivot against the bias of the elastic cable 20. Release of foot pressure on the arm 46 will result in movement of the motor 12 about its pivot at the urging of the elastic cable 20 and in pivotal movement of the lever 36 in a clockwise direction. Thus, an occupant of the boat may sit on the side of the boat adjacent the control cable 30 and the pulley 32 on an appropriate seat (not shown) and manipulate the lever 36 conveniently with his left foot. If a right-hand turn is desired, release of foot pressure or only a minimum of foot pressure is required to hold the motor in the position shown in FIG. 1 and to thus effect the desired turn. If a straight ahead course is desired slight additional foot pressure is applied to the arm 46 to move the lever 36 to a vertical position and thus move the motor to a central or straight ahead position as shown in FIG. 2. A left-hand turn may obviously be accomplished by exerting sufficient foot pressure to pivot the lever 36 to a position such as that shown in FIG. 3.

In accordance with the presently preferred practice, the control cable 30 and the foot lever 36 are constructed and arranged so that the motor 12 is positioned in a central or straight ahead position for straight ahead steering of the boat when the lever 36 is vertical as illustrated in FIG. 2. Thus, automatic straight ahead steering may be provided for by locking said lever in the vertical position. Further, the motor may be conveniently started when held in a straight ahead position. In accordance with the invention, a releasable latch 48 is provided for so locking the lever 36 and said latch is preferably supported on the clamp 38 which supports the lever 36.

As shown, the latch 48 is mounted on a pin 50 for free pivotal movement in a substantially vertical plane. A lug 52 formed on the journal member 40 engages the latch 48 when the latter is in an upper position as shown in FIG. 4 and limits the pivotal movement of the lever 36 in the clockwise direction with the said lever in a vertical position as illustrated in FIG. 2. Thus, with the latch 48 held in the upper position as shown, the occupant of the boat may remove his foot from the arm 46 or release pressure thereon allowing the biasing cable 20 to pivot the motor 12, pull the control cable 30, and pivot the lever 36 until the lug 52 engages the latch 48. The latch 48 will thereupon be held in its upper position by frictional forces between the same and the lug 52 induced by the force exerted by the biasing cable and the boat will follow a straight ahead course without further manipulation of the steering apparatus. To release the latch 48, only a slight foot pressure on the lever 38 tending to pivot the same in a counterclockwise direction is needed. This will result in a loss of the frictional forces between the latch 48 and the lug 52 and the latch will automatically fall at the urging of gravity to a second position illustrated in broken line form in FIG. 4. In this position of the latch 48, the lug 52 will pass freely thereabove during clockwise pivotal movement of the lever 36 past the central or vertical position.

From the foregoing, it will be apparent that a foot operable boat steering apparatus has been provided which is inexpensive and easily manufactured. The apparatus may be readily installed on a number of types of small

boats equipped with a variety of outboard motors or other tiller means without special skill or tools. The apparatus will not interfere with normal hand steering as by means of the steering handle or tiller on an outboard motor or said other tiller means. The pulleys 24 and 32 and the bracket 22 may obviously be of a quick connect and quick disconnect type so that the apparatus can be conveniently attached to and detached from the boat. Finally, a simple and yet highly effective releasable latching device has been provided whereby automatic straight ahead steering may be accomplished in a convenient and yet dependable manner. The hand of an occupant of the boat is necessarily or at least desirably utilized in holding the latch in its upper position for engagement, but it may be disengaged or released quite conveniently with only a slight foot pressure as described.

The invention claimed is:

1. A foot operable steering apparatus for a small boat having tiller means pivotally supported on its stern, the said apparatus comprising biasing means tending to pivot the tiller means toward one side of the boat, mechanism connected with the tiller means and adapted to be operated by foot pressure to pivot said tiller means toward the opposite side of the boat in opposition to said biasing means, and a releasable latch means operatively connected with said mechanism and adapted to limit pivotal movement of said tiller means toward said one side of the boat so as to provide for automatic straight ahead steering, said latch means being constructed and arranged so as to be held in latching position with respect to said mechanism by force exerted by said biasing means and so as to automatically move out of such latching position at the urging of gravity when said mechanism is operated to pivot said tiller means toward the opposite side of the boat.

2. A foot operable steering apparatus for a small boat having tiller means pivotally supported on its stern, the said apparatus comprising an elastic biasing cable secured in tension between the tiller means and the boat on one side of the tiller means, a cable guide secured to the boat on the opposite side of the tiller means, a control cable engaged with said guide and secured at one end to the tiller means, a pivotally supported lever connected with the other end of said control cable and adapted to be pivoted in one direction by foot pressure to pull said control cable in one direction and thereby pull said tiller means in one direction about its pivot against the urging of said elastic cable, said elastic cable being operable on release of foot pressure on said lever to pull said tiller means and control cable in an opposite direction and pivot said lever in an opposite direction, and a releasable latch operatively associated with said lever and adapted to limit pivotal movement thereof in said opposite direction and thus limit pivotal movement of the tiller means in said opposite direction so as to provide for automatic straight ahead steering, said latch being constructed and arranged so as to be held in latching position with respect to said lever by the biasing force exerted by said elastic cable and so as to automatically move out of such latching position at the urging of gravity when said lever is pivoted in said one direction.

3. A foot operable steering apparatus for a small boat having an outboard motor pivotally mounted on its transom for steering, the said apparatus comprising an elastic biasing cable secured in tension between the outboard motor and the boat on one side of the motor, a cable guide secured to the boat on the opposite side of the motor, a control cable engaged with said guide and secured at one end to the motor, a clamp secured to the upper edge portion of the transom of the boat on said one side of the motor, a generally vertical lever pivotally connected at its upper end to said clamp and having the other end of said control cable connected thereto at its lower end portion, a laterally extending arm on the lower end portion of said lever adapted to be engaged and subjected to pressure by

the foot of an occupant of the boat to pivot the lever in one direction whereby to pull said control cable in one direction and to pull said motor in one direction about its pivot against the urging of said elastic cable, said elastic cable being operable on release of foot pressure on said lever arm to pull said motor and control cable in an opposite direction and pivot said lever in an opposite direction, and said control cable and lever being constructed and arranged so that said motor is positioned for straight ahead steering when said lever is in a vertical position, a latch mounted on said clamp for free pivotal movement from an upper to a lower position in a substantially vertical plane, and a lug on an upper portion of said lever adapted to engage said latch in its upper position and limit pivotal movement of said lever in said opposite direction with said lever in a vertical position, said lug and latch being constructed and arranged so that they are

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maintained in engagement to limit lever movement as described by the biasing force exerted by said elastic cable and so that they are automatically disengaged as a result of a gravity induced fall of the latch when said lever is pivoted in said one direction from the vertical.

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