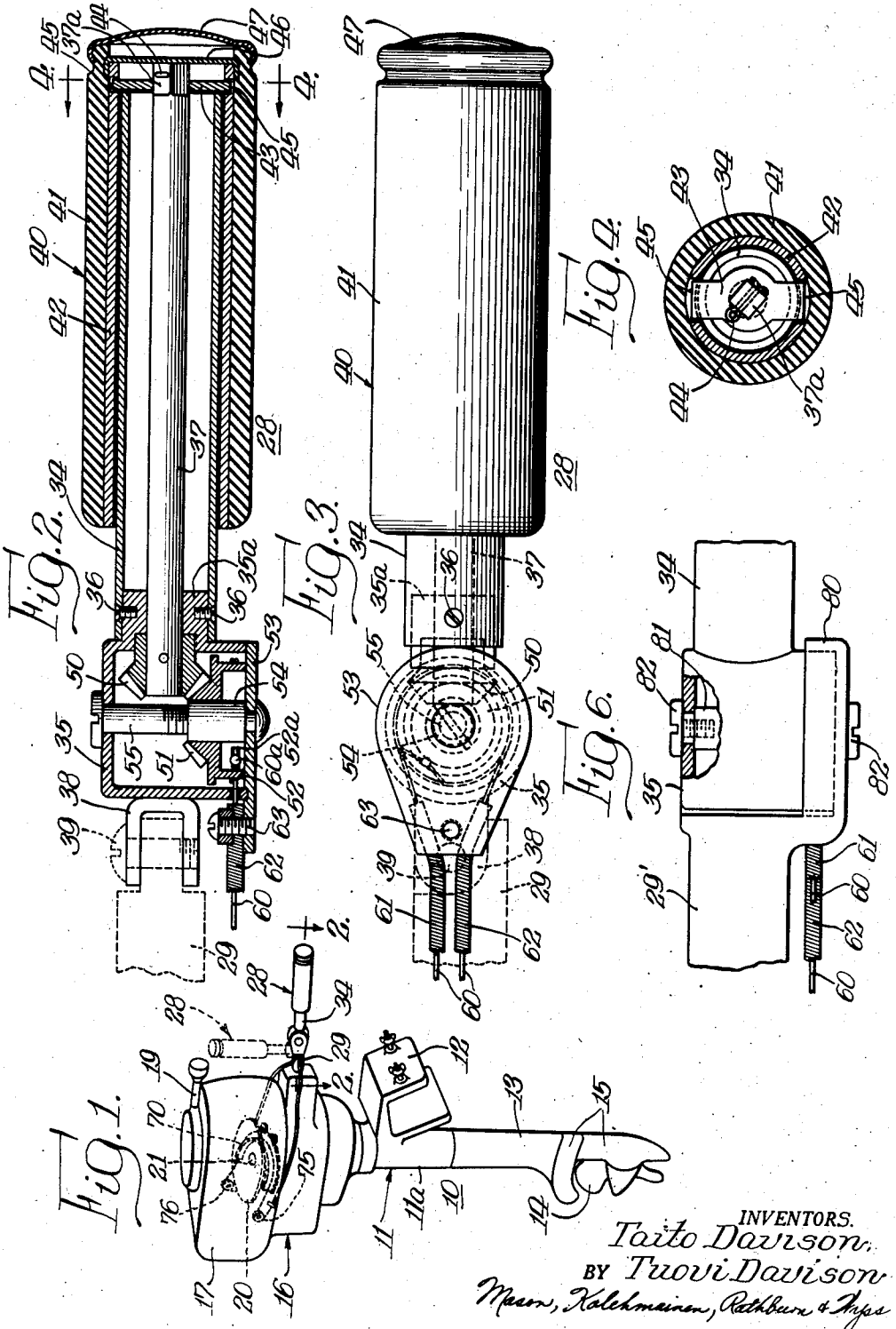
Sept. 8, 1953 T. DAVISON ET AL 2,651,278

OUTBOARD MOTOR CONTROL

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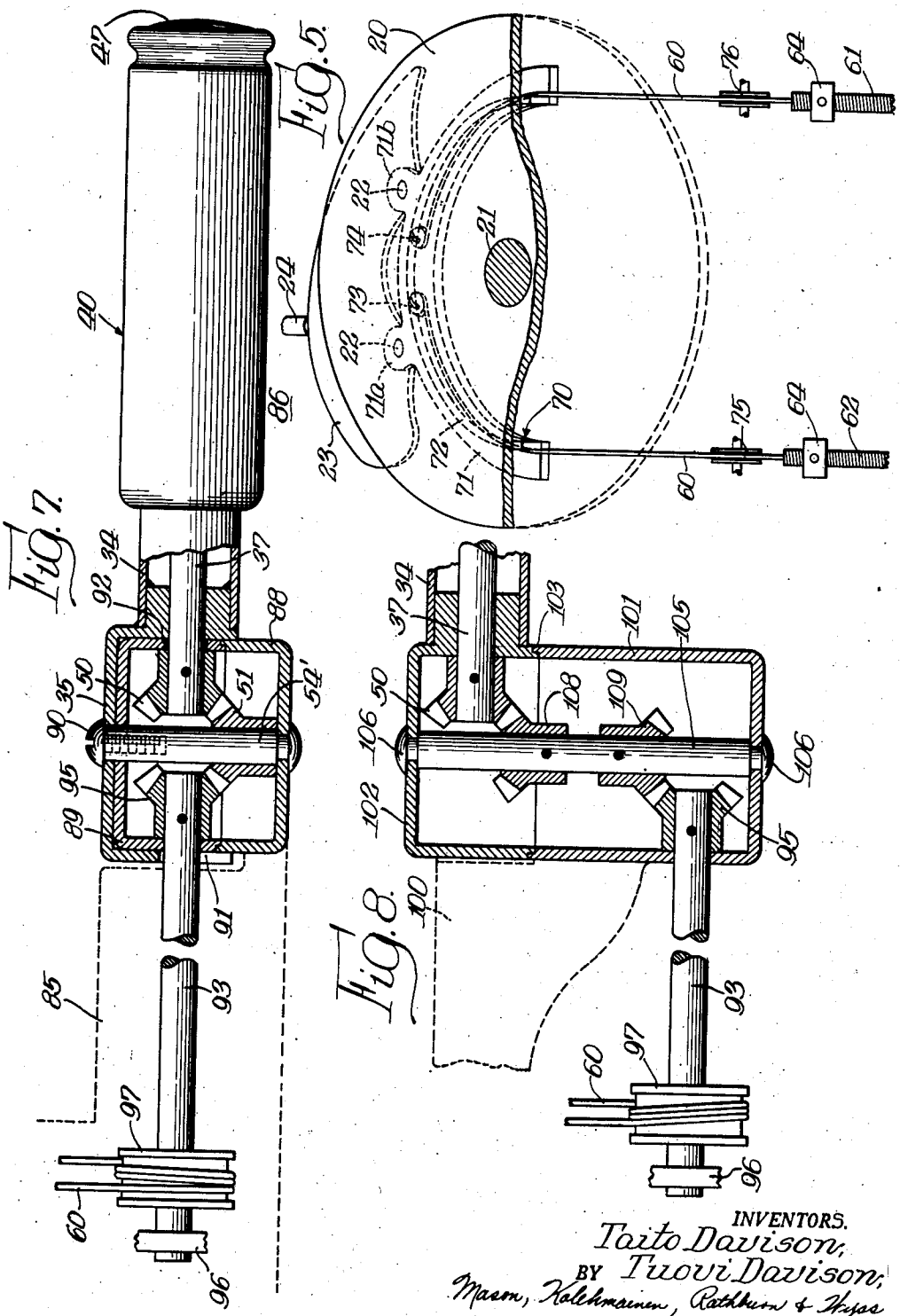


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OUTBOARD MOTOR CONTROL

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7 Claims. (Cl. 115—18)

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This invention relates to outboard motor controls, and more particularly to a new and improved combined tiller and carburetor control for outboard motors.

The outboard motor is a well-known form of boat-propelling mechanism of the type having a bodily-movable structure comprising a motor assembly and a drivingly-connected submersible-propelling assembly adapted for movement as a unit, usually through an angle of the order of 360 degrees, with respect to a supporting bracket for supporting the boat-propelling mechanism at the stern of a boat. Such outboard motors conventionally comprise a tiller which is commonly in the form of a horizontally extending rod or member by means of which the bodily-movable structure comprising the motor and propelling assemblies are rotated relative to the supporting bracket for steering or guiding the boat. This steering operation is accomplished by virtue of the fact that such outboard motors inherently include a portion which moves with the tiller and which effectively operates as a rudder. To be readily available to the operator, such a tiller preferably extends a substantial distance away from the motor so as to be disposed in the area adjacent the operator's seat at the stern of the boat. However, the tiller can not be readily accessible to the operator and still not interfere at least to some extent with activity at the stern of the boat. For the purpose of resolving this difficulty it has been common practice to provide a hinged tiller which may be "lifted" out of the way under certain condition.

In addition to steering or guiding the boat by means of the tiller, the operator of the outboard motor should also have readily available to him manually-operable control means for controlling the speed of operation of the outboard motor either by spark or fuel control or a combination thereof. If control of the fuel supplied to the motor is involved, such control is usually referred to as carburetor control. It would be desirable to provide such fuel control means as an integral part of the tiller so as to be readily accessible to the operator while permitting the tiller to be hinged for the purpose of being lifted out of the way when desired. Various rather involved arrangements have been suggested for accomplishing this but such arrangements have in general been very complicated with the result that at crucial times unsatisfactory operation occurs. Also the carburetor control adjustment is varied when the tiller is moved out of the way, which is not too satisfactory. It would be desirable to

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provide a combined tiller and carburetor control means which is simple and inexpensive to manufacture, foolproof in operation, and which in no way interferes with getting the tiller out of the way in those situations where that is important.

Accordingly, it is an object of the present invention to provide a new and improved combined tiller and motor speed control means for a boat-propelling mechanism.

It is another object of the present invention to provide a new and improved, simple and compact means for converting rotary motion of a hand-grip control to rotary motion of a speed control means disposed at a distance therefrom.

It is a further object of the present invention to provide a combined tiller and speed control arrangement for outboard motors which is readily capable of being applied as a unit to existing outboard motors with little or no modification thereof.

Still another object of the present invention is to provide a new and improved tiller and motor boat speed control means wherein complicated lever and gear systems are completely eliminated and yet wherein foolproof operation is obtained by means of an inexpensive and easy-to-manufacture mechanism.

It is a further object of the present invention to provide a sturdy and foolproof combined tiller and speed control for a boat propelling mechanism which is inexpensive to manufacture, easy to install and which will give long foolproof and satisfactory operation.

Further objects and advantages of the present invention will become apparent as the following description proceeds, and the features of novelty which characterize the invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of the present invention, reference may be had to the accompanying drawings, in which:

Fig. 1 is a perspective view of a representative boat-propelling mechanism embodying the present invention;

Fig. 2 is an enlarged sectional plan view taken substantially on line 2—2 of Fig. 1, showing the combined tiller and carburetor control of what is at present considered to be the preferred embodiment of the invention;

Fig. 3 is an enlarged side elevational view of the combined tiller and control of Fig. 1;

Fig. 4 is a sectional view taken on lines 4—4 of Fig. 2;

Fig. 5 is a somewhat enlarged perspective schematic view of a conventional motor stator plate, partially broken away, with the associated mechanism of the present invention attached thereto to show how simple it is to apply the present invention to most outboard motors;

Fig. 6 is a fragmentary view somewhat similar to Fig. 2 illustrating a modification of the present invention; and

Figs. 7 and 8 are views similar to Fig. 2, partly in section, of modifications of the combined tiller and carburetor control of the present invention.

Referring now to Figs. 1 to 5 of the drawings, which at present constitute what is believed to be the preferred embodiment of the present invention, there is illustrated an outboard motor generally designated at **10** which may be of conventional construction since the detailed features thereof form no part of the present invention. Essentially such an outboard motor comprises a bracket **11** including a clamp portion **12** adapted to be clamped to the transom of a boat. The bracket **11** furthermore includes a vertically disposed bearing sleeve **11***a* for supporting a unitary structure comprising a motor assembly and propeller shaft for movement through preferably 360 degrees of rotation. The outboard motor **10** additionally includes a drive shaft housing sleeve **13** which connects a submersible lower unit including a propeller **14** and rudder structure **15**, disposed below the bracket **11**, with a motor unit **16** disposed above the bracket **11**. Conventionally the motor **16** includes a fuel tank **17** which is preferably disposed in a streamlined manner with respect to a magneto fly wheel, not shown, and an associated starting element **19**.

For the purpose of controlling the fuel supplied from the fuel tank **17** to a carburetor, not shown, the carburetor is conventionally controlled by a rotatable stator plate generally designated at **20** in Fig. 5 of the drawings and pivotal about an axis **21**. To the stator plate **20** there is preferably fastened, as by means of suitable screws **22**, a fuel control cam **23**. Upon pivotal movement of the stator plate, the fuel control cam **23** effects movement of a carburetor control lever **24** for controlling in any desired manner the supply of fuel from the fuel tank **17** to the motor **16**. In the modern type of outboard motor the stator plate is rotatable through an angle of 90° and has supported thereon certain elements, not shown, for also controlling the spark upon pivotal movement thereof. Generally for the first 45 degrees of pivotal movement of the stator plate the speed control is almost exclusively by spark control with a relatively fixed carburetor setting, while for the remaining 45 degrees of pivotal movement the speed control is dependent upon joint carburetor and spark control. The particular construction of the stator plate **20**, the cam **23** and the carburetor control lever **24** form no part of the present invention and are merely illustrated to aid in understanding the present invention.

From the above description it will be understood that the structure comprising the outboard motor **10** is pivoted about the bracket **11** whereby the associated boat may be turned or guided in dependence upon the relative positions of the bracket **11** and the rest of the outboard motor **10**.

In order to produce relative movement of the bodily-movable structure mounted for rotation with respect to the bracket **11**, there is provided a tiller unit generally designated at **28** which is connected to the movable motor structure by

means of a bracket or extension **29**. The tiller unit **28** is normally in the horizontally disposed solid line position shown in Fig. 1 of the drawings. In order that the tiller **28** may be moved out of the way when occasion demands it, it is preferably pivotally mounted to the bracket **29**, as described hereinafter, so as to be capable of readily being moved to the dotted line position shown in Fig. 1 thereby being effectively lifted out of the way. The detailed construction of the tiller **28** is best shown in Figs. 2, 3 and 4 of the drawings where a portion of the bracket **29** is also shown as well as its connection with the tiller unit **28**. Although the tiller **28** is free to move between the dotted and solid line positions of Fig. 1, it provides a rigid extension of the bracket **29** in so far as movement of the bodily-movable outboard motor structure with reference to the bracket **11** is concerned.

For the purpose of providing a combined tiller and spark or carburetor control or both, the tiller **28** in accordance with the present invention comprises a tubular member **34** forming a hollow handle, to one end of which is suitably fastened a housing defined in part by a cup-shaped member **35** having an integral extension **35***a* telescopically related with respect to one end of the tubular member **34**. As illustrated, suitable fastening means **36** rigidly interrelate the cup-shaped member **35** and the tubular member **34**. The integral extension **35***a* of the cup-shaped member **35** defines a bearing for a rotatable shaft-like member **37** concentrically arranged with respect to the tubular member **34** and effectively disposed within the hollow handle.

To permit movement of the tiller **28** from the solid line position of Fig. 1 to the dotted line position there shown, there is provided a U-shaped member **38** having its bight welded or otherwise secured to the cup-shaped member **35**. A suitable screw **39** extending through the arms of the U-shaped member **38** and the bracket **29** provides a horizontal pivot for the tiller **28** enabling it to move in a vertical plane.

In order to rotate the shaft **37** from the outside of the tubular member **34** there is provided a concentrically disposed rotatable manually graspable member **40** surrounding the tubular member **34**. The member **40** thus comprises a grip which is rotatable to perform a control operation such as controlling the fuel supply, spark or both fuel supply and spark. This member **40** might also be designated as a "twist type control." As illustrated, it comprises an outer sleeve **41** of a suitable material such as rubber or plastic material which adapts itself to be manually grasped and an integrally related inner sleeve **42** which is effectively journalled on the tubular member **34**.

The member **40** is drivingly connected to the shaft **37**. The end of the shaft **37** remote from the cup-shaped portion **35** is preferably provided with a square or hexagonal portion **37***a* for supporting thereon a drive plate **43** preferably held in position on the square or hexagonal portion **37***a* of the shaft **37** by means of a cotter pin **44**. The adjacent end of the sleeve **41** is provided with diametrically opposed openings **45** to receive the ends of the plate **43**. One end of the inner sleeve **42** is closed by means of an inside cup **46** against which the grip portion **41** is squeezed by means of a somewhat flexible metal cap member **47** preferably formed of aluminum or the like which effectively provides a closure of pleasing appearance for the tubular sleeve **34**.

From the above description it will be under-

stood that rotation of the grip portion **40** will cause rotation of the shaft **37** within the hollow handle of the tiller unit **28** defined by the tubular member **34**. The grip portion **40** further provides a very satisfactory handle portion for the tiller.

In accordance with the present invention means are provided within the cup-shaped member **35** to utilize the rotary motion of the shaft **37** to effect movement of a mechanism disposed outside the cup-shaped member **35**. To this end there is suitably keyed to the end of the shaft **37** adjacent the bearing **35***a* thereof a bevel gear **50**. This bevel gear **50** is in engagement with the gear portion **51** of a combined gear and drum member including the integral drum **52**. As illustrated, the housing defined by the cup-shaped member **35** is completed by means of closure member **53** having suitably secured thereto a stub shaft **54** forming a support for the combined drum and gear **51—52**. Shaft **54** is provided with a threaded recess to receive a suitable screw **55** for fastening the closure **53** to the cup-shaped member **35**, with the bevel gears **50** and **51** engaged. The closure **53** is preferably fixedly related to the cup-shaped member by any suitable means which might even include being welded thereto.

In order that the tiller unit **28** may be moved from the solid line to the dotted line positions shown in Fig. 1, while still providing means for transmitting rotary motion of the member **40** to rotary motion of the stator plate **20**, there is provided, in accordance with the present invention, motion transmitting means in the form of an elongated longitudinal movable flexible cable means **60** extending between the stator plate **20** and the drum **52**. As illustrated, a portion of the flexible cable **60** is wrapped around the drum **52** while the ends thereof terminate adjacent the stator plate **20**. Portions of the cable **60** extending from the drum **52** may be slidably mounted within flexible conduits **61** and **62** respectively. The ends of the conduits **61** and **62** adjacent the cup-shaped member **35** are clamped by clamping means **63** to an extension of the closure member **53**. The other ends of the flexible conduits **61** and **62** are clamped to suitable portions of the motor structure as indicated schematically at **64** in Fig. 5.

To prevent slippage the cable **60** is preferably also fastened to the drum **52**. As illustrated the drum **52** is a hollow drum having an opening **52***a* defined in the periphery thereof, which opening might comprise a saw cut of sufficient width to permit the flexible cable **60** to extend therethrough. A suitable enlargement incapable of passing through the opening **52***a* such as a ball **60***a* is preferably swaged to the cable **60** and the ends of the cable are extended through the opening **52***a* so the ball **60***a* is inside the drum **52**. The ends of the cable can now be wrapped around the drum and by virtue of the ball **60***a* is suitably connected thereto.

In order to convert the longitudinal motion of the ends of the cable **60** to rotary motion of the stator plate **20**, a yoke **70** is secured to the plate. The yoke **70** comprises a U-shaped plate **71** and a U-shaped flange **72** which may or may not be integral with the plate **71**. The ends of the cable **60** are fastened to the flange **72** as indicated at **73** and **74**. Suitable guide means in the form of pulleys **75** and **76** mounted on the motor unit may be provided to guide the cable **60** for any desired change in direction of longitudinal movement thereof. Preferably the U-shaped plate **71** is provided with ears **71***a* and **71***b* having openings coaxial with the fastening means **22** for relating the stator plate **20** with the fuel control cam **23**. The same fastening means **22** can therefore be employed to fasten both the yoke **70** and the fuel control cam **23** to the stator plate **20**, whereby the present invention may readily be applied to any conventional outboard motor merely by supplying the yoke **70** and the pulleys **75** and **76** together with the tiller unit **28** including the cable **60** and flexible conduits **61** and **62**, described above. It should be understood that the yoke **70** might be integrally formed with the stator plate where the outboard motor is initially designed to be equipped with the tiller **28**.

The cable **60** and conduits **61** and **62** between the yoke **70** and the tiller unit **28** are relatively loose as shown in Fig. 1 of the drawings to permit movement of the tiller **28** from the solid line to the dotted line positions shown, which movement can occur without any relative movement between the member **40** and the sleeve **34**. This is desirable as it insures the gas control setting will not be changed by movement of the tiller **28**. In prior art devices the gas control setting was usually changed with such movement of the tiller with the consequent speeding up or slowing down of the motor as the case might be.

The relative sizes of the drum **52** and yoke **70** are preferably such that the ninety degree rotation of the stator plate is obtained with about 360 degrees of rotation of the twist type control thereby giving very accurately controllable speed control. The tiller **28** can furthermore be lifted out of the way at any position of the stator plate and twist type control which is not true of prior art devices.

In view of the detailed description included above, the operation of the present invention will readily be understood by those skilled in the art. Briefly, the twist type control member **40** may readily be grasped by the operator for bodily rotating the motor unit relative to the bracket **11** to steer the boat. By rotating the member **40** around the sleeve **34** a simple means is provided for controlling the fuel supply or spark or both of the outboard motor and consequently the speed thereof. Neither the spark nor the carburetor setting is changed when the tiller unit **28** is moved from the solid line to the dotted line positions of Fig. 1 as the cable **60** and conduits **61** and **62** between the stator plate **20** and the drum **52** are relatively loose. Also both conduits **61** and **62** tend to move up and down substantially equally so that if any forces are applied to the cable **60** during this movement of the tiller unit they neutralize each other. In other words, an equal pull on each half of the cable **60** either toward or away from the stator plate **20** will cause no movement of such stator plate. By using the flexible cable arrangement disclosed, complicated lever and linkage means used heretofore may be completely eliminated. Also the combined tiller and carburetor control may be supplied as a unit to most existing outboard motors with no change or at most very inconsequential changes.

It will be undertsood that in some outboard motors a relatively fixed carburetor adjustment is employed and speed control is obtained by advancing and retarding the spark. The present invention is equally applicable to such an ar-

rangement as well as to fuel control alone or conjoint fuel and spark control, and where carburetor control means is referred to in the specification and appended claims it is intended to include the equivalent speed control arrangement for spark control, carburetor control or a combined spark and carburetor control.

In the arrangement described above the swivel axis for the tiller 28 defined by the screw 39 interconnecting the bracket 29 with the tiller 28, although closely adjacent to the axis of the rotatable drum 52, is not coincident therewith. This construction permits the member 38 to be of any desired configuration for pivotal connection with any form of bracket 29. Hence the construction is particularly well adapted for installation on any line of outboard motors with little or no modification thereof. Where it is permissible to modify the construction of the bracket 29 a compact construction results if the axis of the rotatable drum 52 and the pivot point for the tiller 28 are made coincident. Such an arrangement is disclosed in Fig. 6 of the drawings where corresponding parts are designated by the same reference numerals as in the preceding figures.

As illustrated in Fig. 6, the bracket attached to the motor unit and specifically designated at 29' is provided with a somewhat cup-shaped extension defining a swivel plate 89 cooperating with the cup-shaped member 35 to provide a swivel whereby the tiller unit 28 may be lifted to an out-of-the-way position when desired. Disposed within the cup-shaped member 35 is a shaftlike member 81 defining the swivel axis and also supporting the drum 52 for rotation thereon. The shaftlike member 81 coincident with the swivel axis is recessed at each end to receive suitable screws 82 thereby completing the swivel connection between the cup-shaped member 35 and the swivel plate 89 of the bracket 29' and holding the same in assembled relationship.

The arrangement disclosed in Fig. 6 will operate in substantially the same manner as the arrangement disclosed in Fig. 2 where the swivel axis for the tiller unit 28 is not coincident with the axis of the rotatable drum 52. In the arrangement of Fig. 6, however, when the tiller unit 28 is pivoted to its "out-of-the-way" position the drum 52 must remain stationary if the stator plate 29 is not to be disturbed. Consequently the member 40 may be permitted to rotate about the sleevelike member 34 during the pivotal movement of the tiller unit 28 about its swivel axis.

In the arrangements described thus far the flexible cable means 69 extends into the housing 35. Under certain conditions it may be desirable to eliminate the portion of the flexible cable means adjacent the housing 35. In Figs. 7 and 8 of the drawings the flexible cable means 69 does not extend to the swivel axis. As will be apparent from the ensuing description, the arrangement of Fig. 7 might be termed an "in line" arrangement while correspondingly the arrangement of Fig. 8 might be termed an "out of line" arrangement.

Referring now to Fig. 7 of the drawings there is illustrated an "in line" arrangement somewhat similar to Fig. 6 where a bracket 85 shown in dotted lines is assumed to be rigidly attached to the outboard motor structure, this bracket having a particular configuration for cooperation with a tiller 86 in some ways quite similar to the tiller 28. The corresponding parts of Fig. 7 are designated by the same reference numerals as in the preceding figures. As illustrated, the sleeve member 34 is suitably attached as by welding or the like to the cup-shaped member 35 and the bevel gear 50 is attached to the shaft 37 in substantially the same manner as in Fig. 2 of the drawings. Associated with the bracket 85 and welded or otherwise fastened thereto is a swivel member in the form of a cylindrical enclosure comprising complementary cup-shaped members 88 and 89. The bevel gear 51 is supported for rotation on a shaftlike member 54' extending along the axis of the cylindrical enclosure. As illustrated, this member 54' has one end riveted to the cup-shaped member 88 and extends along the swivel axis of the cup-shaped member 35 into which the cylindrical enclosure is nested. A suitable screw 90 threaded into the other end of the shaftlike member 54' completes the swivel connection.

In order that the tiller may be lifted by rotation about the axis of the shaft 54', the housing 35 is provided with a peripheral slot 91 and the cup-shaped member 89 is provided with a peripheral slot 92. Shaft 37 extends through slot 92 and a second shaft 93 extends through slot 91. These shafts 37 and 93 have their axes colinear and hence the expression "in line" arrangement.

The arcuate lengths of these slots can be used to determine the extent of movement of the tiller about the swivel axis and consequently serve as stop members.

In order to transmit the rotary motion of the bevel gear 51 about the swivel axis outside the housing defined by the cup-shaped members 88 and 89, the shaft 93 is connected by a suitable bevel gear 95 with bevel gear 51. The end of shaft 93 remote from the gearing is suitably supported in a bearing 96, schematically illustrated, and a pulley or drum 97 is mounted on the shaft. An intermediate portion of the flexible cable 60 is wrapped around the drum 97 so that it functions in the same manner as the drum 52 described above.

It will be apparent from the foregoing that the tiller 86 may be pivoted about the swivel axis defined by the shaftlike member 54'. During such pivotal movement of the tiller, the rotatable member 40 may turn so that the drum 97 and stator plate 20 remain stationary. The operation of the arrangement of Fig. 7 is set forth in connection with the operation of Fig. 8 described hereinafter in view of the substantially identical operating features thereof.

Under certain conditions it may be desirable to have the motion transmitting shaft 93 axially displaced from the shaft 37 rather than to be located on the same axis, as in Fig. 7 of the drawings. Such an "out of line" arrangement is disclosed in Fig. 8 of the drawings where a very similar arrangement is illustrated. In Fig. 8 a bracket 100 shown in dotted lines is rigidly connected to the outboard motor structure. To provide a swivel plate the free end of the bracket 100 is connected as by welding or the like with a cup-shaped member 101. A complementary cup-shaped member 102 is provided which interfits with the cup-shaped member 101 to define a cylindrical enclosure. The interfitting portions of the cup-shaped members 101 and 102 are designated at 103. The cup-shaped member 102 is rigidly connected to the sleeve member 34 and the shaft 37 is adapted to extend through a suitable opening in the cup-shaped member 102. The shaft 93, on

the other hand, is adapted to extend into the cup-shaped member **101**. The shafts, although parallel, may be substantially displaced from each other in dependence upon the depth of the cup-shaped members **101** and **102**. As illustrated, the cup-shaped members **101** and **102** are held in relatively rotatable relationship by a suitable shaftlike member **105** having the ends riveted as indicated at **106**. Suitably fastened to the shaft-like member **105** are a pair of bevel gears **108** and **109** which are in mesh respectively with the bevel gears **50** and **95** thereby drivingly interconnecting the shafts **37** and **93**.

The operation of the arrangements disclosed in Figs. 7 and 8 of the drawings is substantially identical, the difference being primarily in the positional arrangement of the shaft **93** relative to the shaft **37**. As in the preceding arrangements, rotation of the twist type control by rotation of the grip member **40** through an angle of approximately 360 degrees causes pivotal movement of an associated stator plate through 90 degrees of rotation. The swivel axis for lifting the tiller out of the way is coincident with the axis of the gears such as **51**, **108** and **109**. It will furthermore be apparent that regardless of the position of the twist type control the tiller may be lifted out of the way at any time, although the grip **40** must be permitted to rotate in the operator's hands during the tilting or lifting operation of the tiller. This latter feature is advantageous in situations where the submersible portion of the outboard motor might strike some submerged object during the operation thereof. If the submersible portion of the motor should strike such submerged object the motor boat will be lifted causing the tiller to pivot about the swivel axis. Since the operator in such case will have a firm grip on the tiller the twist type control will be held stationary and the stator will rotate to vary the speed control. The arrangement of the motion mechanism between the twist type control and the stator plate is preferably such that under these conditions the stator plate is moved in such a direction to decrease the speed of the motor thereby inherently providing a safety measure.

From the above discussion it will be apparent that there has been provided a new and improved combined tiller and speed control arrangement for outboard motors which permits full 90 degree movement of the stator plate of the motor in its conventional manner by simple manipulation of a twist type control and furthermore wherein the tiller may lifted out of the way at any time without regard to its position. The arrangement furthermore is readily adaptable for application to any line of outboard motors with a minimum of change and in many cases no change whatever. Furthermore, the motion of the twist type control is transmitted to the stator plate without employing any complicated linkage mechanism or other means likely to cause difficulty. Moreover, a very simple and compact mechanism is provided which is inexpensive to manufacture and which provides foolproof and satisfactory operation under all conditions.

While there have been illustrated and described several embodiments of the present invention it will be apparent that various changes and modifications thereof will occur to those skilled in the art. It is intended in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the present invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. For use with a boat-propelling mechanism of the type having a bodily movable structure comprising a motor and an associated propelling mechanism adapted for relative movement with respect to means for supporting said structure and including a pivotally mounted stator plate, the combination of a hollow tiller connected to said structure for applying a force to cause bodily movement of said structure relative to said means for supporting said structure, means for pivoting said tiller about a first axis, a manual control member concentrically disposed around a portion of said tiller and adapted to be rotated about the longitudinal axis of said tiller, rotatable means disposed within said hollow tiller drivingly connected to said manual control means, a drum drivingly connected to said rotatable means and rotatable about a second axis parallel to and closely adjacent to said first axis, and elongated longitudinally movable flexible cable means adapted to interconnect said stator plate and said drum for transmitting rotary motion of said drum to pivotal movement of said stator plate.

2. A combined tiller and speed control unit for an outboard motor of the type having a pivotally mounted member for varying the operating speed of said outboard motor, comprising a housing, a rotatable drum within said housing, a hollow handle extending from said housing and rigidly connected to a portion thereof, a rotatable shaft-like member within said hollow handle and extending into said housing, gear means drivingly interconnecting said shaftlike member and said rotatable drum, a twist type manual control element surrounding at least a portion of said handle and drivingly connected to said shaftlike member, said twist type manual control also providing a handle for said tiller, and a longitudinally movable flexible cable means having an intermediate portion wrapped around said drum and the ends thereof adapted to be connected to said pivotally mounted member.

3. For use with a boat-propelling mechanism of the type having a bodily movable structure comprising a motor and an associated propelling mechanism adapted for relative movement with respect to means for supporting said structure and including a movable stator plate, the combination of a yoke movable with said stator plate, a tiller connected to said structure for applying a force to cause bodily movement of said structure relative to said means for supporting said structure, means for pivoting said tiller about a horizontal axis, a manual control member concentrically disposed around a portion of said tiller and adapted to be rotated about the longitudinal axis of said tiller, rotatable means drivingly connected to said manual control member, a drum rotatable about an axis parallel to said horizontal axis, means for rotating said drum in response to movement of said rotatable means, a pair of flexible conduits extending between said drum and said stator plate, a cable having an intermediate portion wrapped around said drum and the ends thereof extending through said flexible conduits in sliding relationship therewith, means for connecting the ends of said cable to said yoke to transmit rotatable movement of said drum to movement of said yoke, and guide means at said motor for guiding said cable ends.

4. For use with a boat propelling mechanism of the type having a bodily movable structure

comprising a motor and an associated propelling mechanism adapted for relative movement with respect to means for supporting said structure and including a pivotally mounted stator plate, the combination of a yoke attachable to said stator plate for pivotal movement therewith, a tiller connected to said structure for applying a force to cause bodily movement of said structure relative to said means for supporting said structure, means for pivoting said tiller about a horizontal axis, a twist type carburetor control member concentrically disposed around a portion of said tiller for rotation about the longitudinal axis of said tiller, rotatable means drivingly connected to said twist type control member, a drum rotatable about an axis parallel to said horizontal axis, means for rotating said drum in response to movement of said rotatable means, a cable having an intermediate portion wrapped around said drum and the ends thereof extending toward said yoke and means for connecting the ends of said cable to said yoke for transmitting rotatable movement of said drum to pivotal movement of said yoke.

5. For use with a boat propelling mechanism of the type having a bodily movable structure comprising a motor and an associated propelling mechanism adapted for relative movement with respect to means for supporting said structure and including a movable stator plate, the combination of a yoke attachable to said stator plate for movement therewith, a tiller connected to said structure for applying a force to cause bodily movement of said structure relative to said means for supporting said structure, means for pivoting said tiller about a horizontal axis, a manual control member concentrically disposed around a portion of said tiller and adapted to be rotated about the longitudinal axis of said tiller, rotatable means drivingly connected to said manual control means, a drum rotatable about an axis parallel to said horizontal axis, means for rotating said drum in response to movement of said rotatable means, a pair of flexible conduits extending between said drum and said stator plate, a pair of cable portions one disposed in each of said conduits for longitudinal sliding movement therein, means for connecting adjacent ends of said cables to said drum, and means for connecting the other adjacent ends of said cable to said yoke for transmitting rotatable movement of said drum to movement of said yoke.

6. For use with a boat-propelling mechanism of the type having a bodily-movable structure comprising a motor and an associated propelling mechanism adapted for relative movement with respect to means for supporting said structure and including a pivotally mounted stator plate, the combination of a hollow tiller connected to said structure for applying a force to cause bodily movement of said structure relative to said means for supporting said structure, means for pivoting said tiller about a first axis, a manual control member supported by said tiller and adapted to be rotated about the longitudinal axis of said tiller, rotatable means disposed within and extending longitudinally of said hollow tiller, said rotatable means being drivingly connected to said manual control means, a pivotal means connected for movement about a second axis, means for drivingly interconnecting said rotatable means and said pivotal means whereby rotation of said manual control member about said longitudinal axis causes movement of said pivotal means about said second axis, and elongated longitudinally movable flexible driving means drivingly interconnecting said stator plate and said pivotal means.

7. For use with a boat-propelling mechanism of the type having a bodily-movable structure comprising a motor and an associated propelling mechanism adapted for relative movement with respect to means for supporting said structure and including a pivotally mounted stator plate, the combination of a driven member capable of being connected for pivotal movement with said stator plate, a hollow tiller connected to said structure for applying a force to cause bodily movement of said structure relative to said means for supporting said structure, means for pivoting said tiller about a horizontal axis, a twist type control member concentrically disposed with reference to a portion of said tiller for rotation about the longitudinal axis of said tiller, rotatable means disposed within and extending longitudinally of said tiller, said rotatable means being drivingly connected to said twist type control member, a pivotally mounted cable operating element, means drivingly interconnecting said element and said rotatable means, cable means extending between said driven member and said cable operating element, and means for connecting said cable means to said driven member and element respectively whereby rotational movement of said twist type control member causes pivotal movement of said driven member and stator plate.

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