

- [54] PULLEY MOUNTING SYSTEM FOR ELECTRIC OUTBOARDS
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- [58] Field of Search 248/4, 284, 278, 280, 279, 248/291, 293; 115/17

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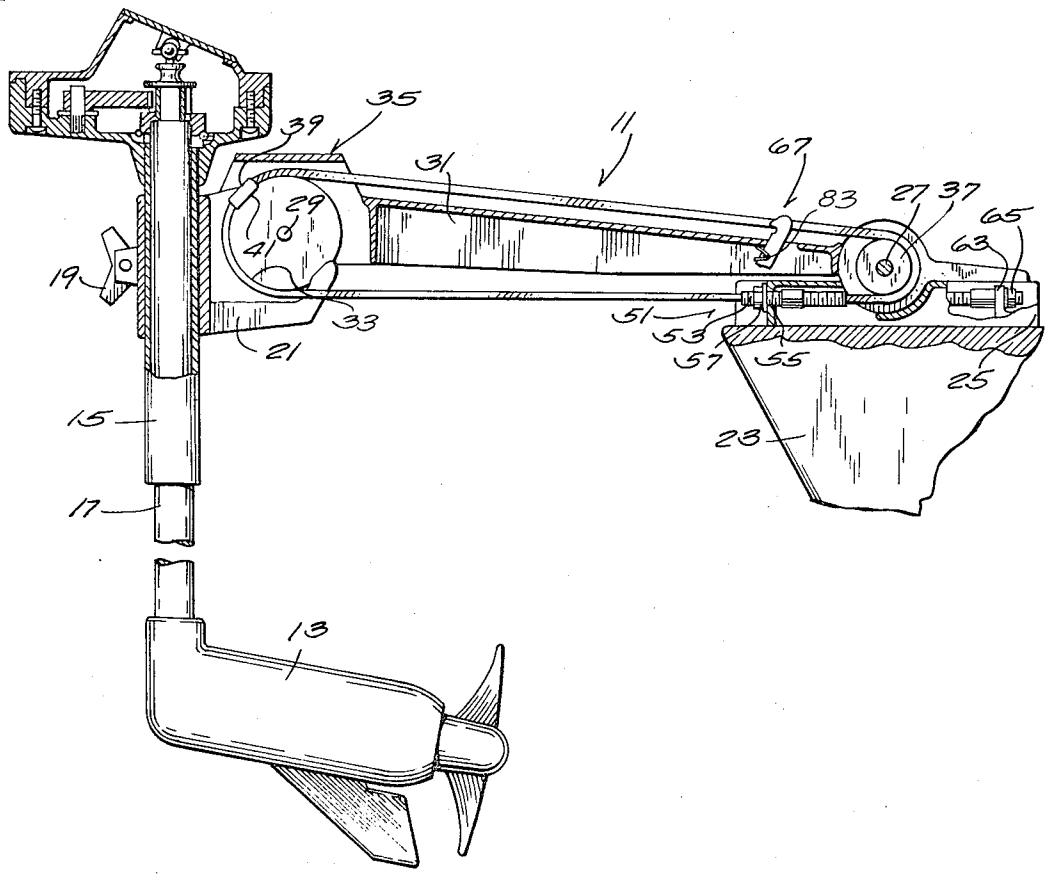
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[57] ABSTRACT

Disclosed herein is an outboard motor mounting arrangement comprising a bracket, an arm pivotally connected to a bracket adapted to support an outboard motor and pivotally connected to a member adapted to be mounted on a boat hull for pivotal movement relative to the member between a storage position in which the arm extends in one direction from the member and an operating position in which the arm extends in the opposite direction, an arcuate surface on the bracket co-axial with the pivotal connection of the bracket to the arm, and means including an element operably connected to the member and to the bracket and extending tangentially to the arcuate surface for rotating the bracket relative to the arm and in response to movement of the arm between the storage position and the operating position.

9 Claims, 5 Drawing Figures

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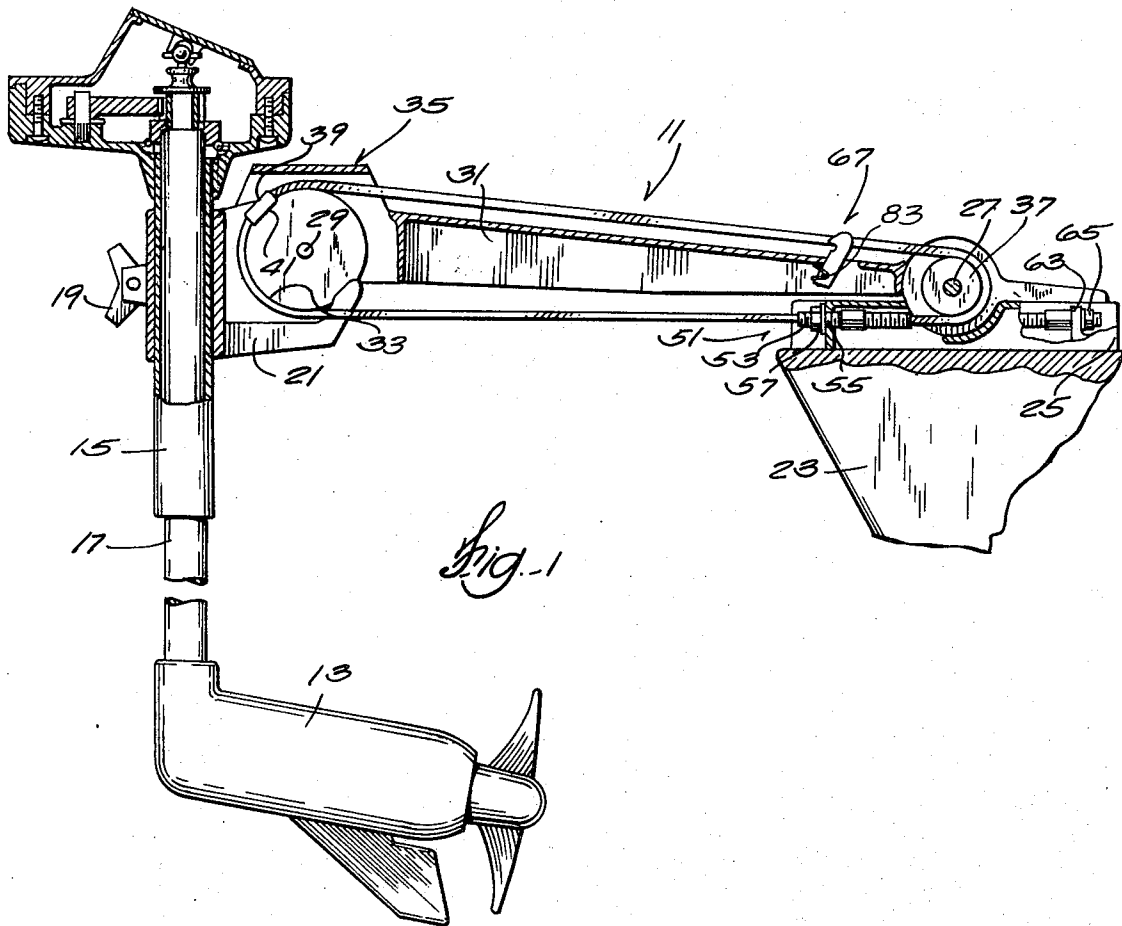
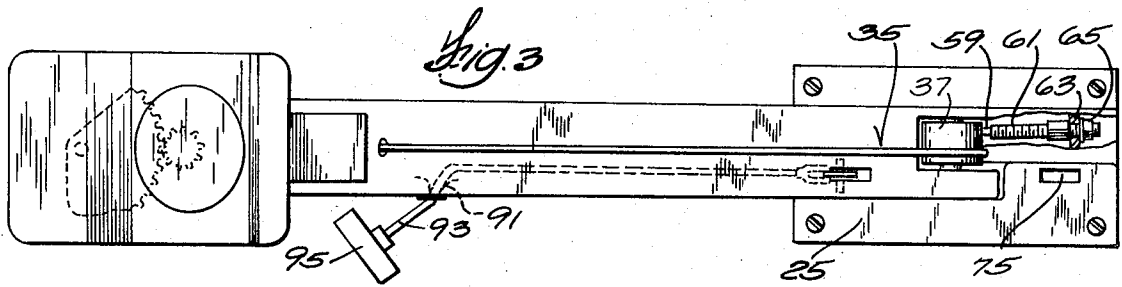


Fig. 2

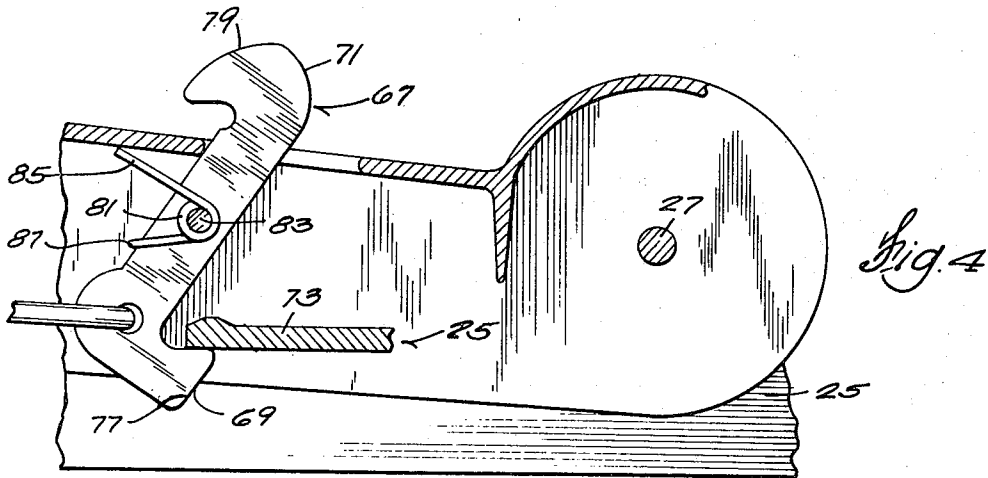
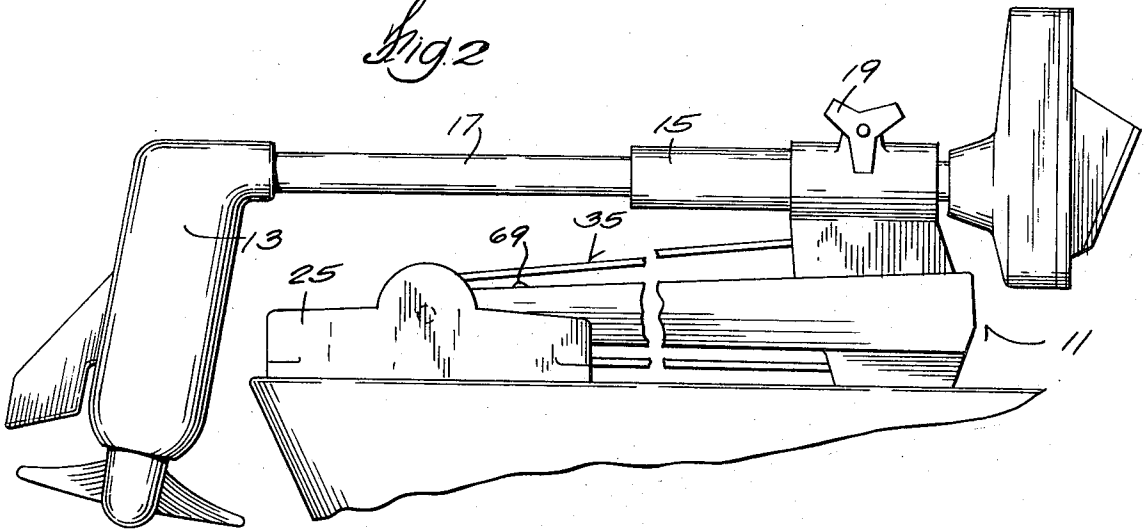


Fig. 4

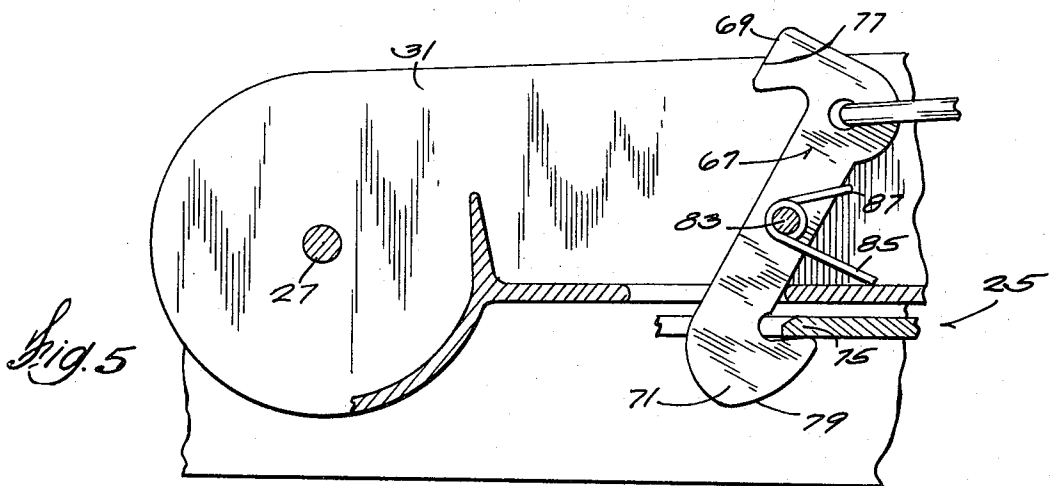


Fig. 5

PULLEY MOUNTING SYSTEM FOR ELECTRIC OUTBOARDS

BACKGROUND OF THE INVENTION

The invention relates generally to mounting arrangements for outboard motors and particularly to mounting arrangements for small electrically operated outboard motors which are often used for fishing and the like.

SUMMARY OF THE INVENTION

The invention provides an outboard motor mounting arrangement including an arm pivotally connected to a bracket adapted to support an outboard motor and pivotally connected to a member adapted to be mounted on a boat hull for pivotal movement relative to the member between a storage position in which the arm extends in one direction from the member and an operating position in which the arm extends in the opposite direction, together with an arcuate surface on the bracket co-axial with the pivotal connection of the bracket to the arm, and means including an element operably connected to the member and to the bracket and extending tangentially to the arcuate surface for rotating the bracket relative to the arm in response to arm movement between the storage position and the operating position.

In further accordance with the invention, the bracket rotating means further includes a part pivotally mounted on the arm about the pivotal connection of the arm to the member and for movement relative to the arm in response to pivotal arm movement and the element is operably connected to the part between the connection of the element to the member and to the arcuate surface so as to displace the arcuate surface through the same distance relative to the arm as the part moves relative to the arm in response to pivotal arm movement relative to the member.

In still further accordance with the invention, the part on the arm comprises a first pulley rotatable relative to the arm, the arcuate surface on the bracket forms a part of a second pulley fixed on the bracket, and the element is an elongated flexible cable, is fixed at each end to the member, and is fixed, intermediate the ends thereof, to the second pulley.

In still further accordance with the invention, there is provided latch means for releasably and selectively holding the arm in the storage and operating positions, as well as means for adjustably varying the connection of the flexible element or cable to the mounting member so as to adjust the cable lengthwise and thereby to adjust the angular relationship of the outboard motor bracket to the arm independently of angular movement of the arm relative to the mounting member.

One of the principal features of the invention is the provision of a new outboard motor mounting arrangement which affords movement of the motor between a storage position and an operating position.

Another of the principal features of the invention is the provision of a motor mounting arrangement including a flexible cable which is fixed at its ends to the mounting member and which extends around a pulley concentric with the pivotal mounting of the support arm to the mounting member and which also extends around, and is fixed to, an arcuate surface on a motor supporting bracket pivotally connected to the arm.

Another of the principal features of the invention is the provision of a motor mounting arrangement including a latch mechanism operable to selectively and releasably retain the outboard motor in either the storage or operating positions.

Other features and advantages of the invention will become known by references to the following drawings, general description, and claims.

DRAWINGS

FIG. 1 is a side elevational view of an outboard motor mounting arrangement embodying various of the features of the invention, with the mounting arrangement being shown in the operating position.

FIG. 2 is a view similar to FIG. 1 with the mounting arrangement shown in the storage position.

FIG. 3 is a top view of the mounting arrangement shown in FIG. 1.

FIG. 4 is a fragmentary view showing a latch incorporated in the mounting arrangement illustrated in FIG. 1, with the latch shown in the position when the mounting arm is in the operating position.

FIG. 5 is a further fragmentary view showing the latch when the mounting arm is in the storage position.

Before explaining the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and the arrangement of the components set forth in the following description or illustrated in the drawing. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein is for the purposes of description and should not be regarded as limiting.

GENERAL DESCRIPTION

Shown in the drawings is an outboard motor mounting arrangement 11 which embodies the invention and which supports an outboard motor 13 which can be of any suitable construction and which can include a housing 15 extending parallel to a drive shaft 17. Fixedly connected to the housing 15 by suitable means, such as a clamp 19, is a support bracket 21.

Fixedly connected to a boat hull 23 is a mounting member 25. Connected pivotally to the mounting member 25 about an axis 27 and connected pivotally to the support bracket 21 about an axis 29 is a supporting arm 31 which is movable relative to the mounting member 25 between an operating position shown in FIG. 1 and extending in one direction relative to the mounting member 25 and a storage position extending from the mounting member 25 in the opposite direction, as shown generally in FIG. 2.

In particular accordance with the invention, the support bracket 21 is provided with an arcuate surface 33 which is preferably arranged co-axially with the axis 29 of the pivotal connection of the bracket 21 and the supporting arm 31 and which has common pivotal movement with the bracket 21 about the pivotal connection between the bracket 21 and the arm 31.

In further accordance with the invention, there is provided means including an element 35 operably connected to the member 25 and to the bracket 21 and extending tangentially to the arcuate surface 33 for rotating the bracket through an angle of about 90° in response to movement of the arm 31 between the storage and operating positions and such that the outboard

motor housing 15 extends generally vertically when the arm 31 is in the operating position and such that the drive shaft housing 15 extends in generally parallel relation to the arm 31 when the arm 31 is in the storage position.

More particularly, in accordance with the invention, the bracket rotating means further includes a part or pulley 37 rotatably mounted co-axially with the pivotal connection between the arm 31 and the mounting member 25 and the element 35 is a flexible member, such as a cable or chain, and is reeved about the pulley 37 and the arcuate surface 33, is connected at both ends to the mounting member 25 and is connected, intermediate its ends, to the arcuate surface 33 so as to prevent relative movement therebetween. Thus, any lengthwise movement of the cable or flexible member, or element 35 induces rotary movement of the support bracket 21 relative to the supporting arm 31. Any means can be employed to prevent arcuate movement between the cable or element 35 and the arcuate surface 33 on the support bracket 21. In the illustrated construction, the element or cable 35 includes an enlarged portion 39 received in a recess 41 in the arcuate surface 33.

In the particularly disclosed construction, the arcuate surface 33 on the support bracket 21 constitutes a portion of a pulley which is rotatable relative to the supporting arm 31 and which forms a fixed part of the outboard motor support bracket 21.

In further accordance with the invention, the means connecting both ends of the element or cable 35 to the mounting member 25 are adjustable so as to facilitate adjustment of the angle between the supporting arm 31 and the outboard motor drive shaft housing 15. Still more specifically, in this regard, one end 51 of the element or cable 35 is attached to a threaded member or stud 53 which extends through a hole in a boss 55 in the mounting member 25 and is adjustably retained by a nut 57.

The other end 59 of the element or cable 35 is connected to a threaded member or stud 61 which extends through a hole in another boss 63 on the mounting member 25 and is adjustably retained by a nut 65. Adjusting the positions of the nuts 57 and 65 on the threaded members 53 and 61 serves to axially displace the element or cable 35 and thereby to vary the angle of the outboard motor drive shaft housing 15 to the supporting arm 31 independently of arm movement relative to the mounting member 25.

Means other than a flexible element or cable 35 can be employed to rotate the support bracket 21 in response to pivotal supporting arm movement. For instance, the arcuate surface 33 could be a gear or sprocket segment and the element 35 could be either a sprocket chain or a rack movable tangentially to the sprocket surface or gear in response to pivotal movement of the supporting arm 31 between the storage and operating positions.

Means are provided for releasably latching the supporting arm 31 to the mounting member 25 when the supporting arm 31 is in either the storage or operating positions. While other arrangements could be employed, in the illustrated construction, such means comprises pivotal mounting on the supporting arm 31 of a latch or part 67 which includes first and second oppositely located hook portions 69 and 71 which are respectively engageable with a first catch 73 on the

mounting member 25 to releasably hold the supporting arm 31 in the operating position and with a second catch 75 on the mounting member 25 to releasably hold the supporting arm 31 in the storage position. The hook portions 69 and 71 can be provided with respective camming edges 77 and 79 to facilitate initial movement of the hook portions 69 and 71 into the catches 73 and 75.

Means are provided for biasing the latch 67 in the direction to effect engagement of the hook portions 69 and 71 with the mounting member 25. While other arrangements could be employed, the illustrated construction employs a helical spring 81 located in encircling relation to a pin 83 which is mounted in the supporting arm 31 and which pivotally supports the latch 67. The spring 81 includes an end 85 engaged against the supporting arm 31 and another end 87 engaged with the latch or part 67 to urge the latch or part 67 in the counterclockwise direction as seen in FIGS. 4 and 5.

Means are provided for displacing the latch or part 67 against the action of the spring 81 to release the latch 67 and for simultaneously lifting the supporting arm 31 and connected outboard motor 13 from the storage and operating positions and for controlling downward swinging movement of the supporting arm 31 and outboard motor 13 to the storage or operating position.

While other arrangements could be employed, in the illustrated construction, such means comprises an aperture or bore or guide 91 in the supporting arm 31 remote from the pivotal connection of the supporting arm 31 to the mounting member 25 and a pull rope 93 which, at one end, includes a handle 95, which extends through the aperture or guide 91, and which, at the other end, is connected to the latch or part 67.

Accordingly, in operation, in either of the storage or operating positions, the latch or part 67 is normally engaged with the mounting member 25 under the action of the spring 81. Upward pulling on the pull rope handle 95 will serve both to disengage the latch 67 and to upwardly vertically swing the supporting arm 31 about the mounting member 25. After the supporting arm 31 has been swung over the top of the mounting member 25, the rope 93 can be employed to control downward swinging movement of the supporting arm 31 into either the storage or operating positions and to ease passage of the hook portions 69 and 71 into the catches 73 and 75.

During movement of the supporting arm 31 relative to the mounting member 25, the cable or element 35 causes rotation of the support bracket 21 relative to the supporting arm 31. As the radius of the pulley 37 at the pivotal mounting of the supporting arm 31 to the mounting member 25 is approximately one-half of the radius of the arcuate surface or fixed pulley 33 on the support bracket 21, the support bracket 21 will rotate relative to the supporting arm 31 through an angular amount which is approximately one-half of the amount of angular movement of the supporting arm 31 relative to the mounting member 25. Thus, as the supporting arm 31 swings through an arc of about 180° between the storage and operating positions, the support bracket 21 swings relative to the supporting arm 31 through an arc of about 90° to locate the drive shaft housing 15 approximately perpendicular to the supporting arm 31 when the supporting arm 31 is in the op-

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erating position and to locate the drive shaft housing 15 in generally parallel relation to the supporting arm 31 when the supporting arm 31 is in the storage position.

Various of the features of the invention are set forth in the following claims.

We claim:

1. An outboard motor mounting arrangement comprising a member adapted to be mounted on a boat hull, a bracket adapted to support an outboard motor, an arm pivotally connected to said bracket and pivotally connected to said member for pivotal movement relative to said member between a storage position in which said arm extends in one direction from said member and an operating position in which said arm extends in the direction generally opposite to said one direction, an arcuate surface on said bracket co-axial with the pivotal connection of said bracket to said arm, and means including an element operably connected to said member and to said bracket and extending tangentially to said arcuate surface for rotating said bracket relative to said arm through an angle of about 90° in response to movement of said arm through an angle of about 180° between said storage position and said operating position.

2. An outboard motor in accordance with claim 1 wherein said bracket rotating means further includes a part pivotally mounted on said arm about the pivotal connection of said arm with said member for movement relative to said arm in response to pivotal arm movement and wherein said element is operably connected to said part between the connection of said element to said member and to said surface so as to displace said surface through the same distance relative to said arm as said part moves relative to said member.

3. An outboard motor in accordance with claim 2 wherein said part on said arm comprises a first pulley rotatable relative to said arm, wherein said surface on said bracket forms a part of a second pulley fixed on said bracket, and wherein said element is flexible, is reeved about each of said pulleys, is fixed at each end to said member, and is fixed, intermediate the ends thereof, to said second pulley.

4. An outboard motor in accordance with claim 3 wherein said flexible element is connected to said member by means providing for lengthwise adjustment of said flexible element relative to said member.

5. An outboard motor in accordance with claim 1

and further including latch means for releasably and selectively holding said arm in the storage and operating positions.

6. An outboard motor in accordance with claim 5 wherein said latch means comprises a latch movably mounted on said arm and including a pair of oppositely located hook portions, and wherein said member includes a first catch located for engagement by one of said hook portions when said arm is in said storage position, and a second catch located for engagement by the other of said hooks when said arm is in said operating position.

7. An outboard motor in accordance with claim 6 wherein said arm includes an aperture spaced from the pivotal connection of said arm to said member and wherein said latch means includes means biasing said latch in the direction to retain engagement of said latch with said member, and means connected to said latch and extending through said aperture in said arm for releasing said latch against the action of said biasing means.

8. An outboard motor mounting arrangement comprising a member adapted to be mounted on a boat hull, a bracket adapted to support an outboard motor, an arm connected to said bracket and pivotally connected to said member for pivotal movement relative to said member between a storage position in which said arm extends in one direction from said member and an operating position in which said arm extends in the direction generally opposite to said one direction, and latch means for releasably and selectively holding said arm in the storage and operating position and including a latch movably mounted on said arm and including a pair of oppositely facing hook portions, a first catch located on said member for engagement by one of said hook portions when said arm is in said storage position, and a second catch located on said member for engagement by the other of said hooks when said arm is in said operating position.

9. An outboard motor in accordance with claim 8 wherein said arm includes an aperture spaced from the pivotal connection of said arm to said member and wherein said latch means includes means biasing said latch in the direction to retain engagement of said latch with said member, and means connected to said latch and extending through said aperture in said arm for releasing said latch against the action of said biasing means.

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