United States Patent [19]

Roller et al.

[11] **3,865,335**

[45] **Feb. 11, 1975**

[54] **BOW BRACKET MOUNTING FOR AN ELECTRIC TROLLING MOTOR**

[75] Inventors: **William G. Roller,** Purdy, Mo. 65734; **Emery L. West,** Oklahoma City, Okla.

[73] Assignee: **said Roller, by said West**

[22] Filed: **Aug. 31, 1973**

[21] Appl. No.: **393,324**

[52] **U.S. Cl.** **248/4,** 115/17

[51] **Int. Cl.** ... **B63b 17/00,** B63h 21/26, F16m 1/02

[58] **Field of Search** 248/4, 284, 286, 278, 279; 115/17; 192/171

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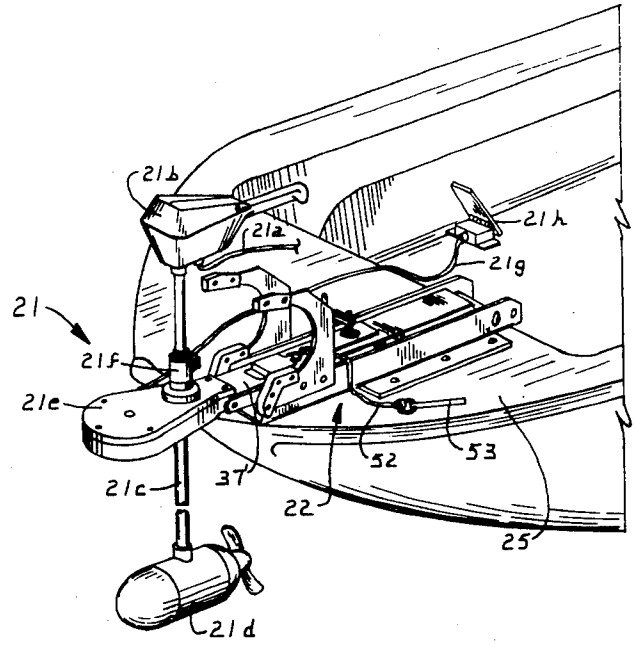
Primary Examiner—J. Franklin Foss

Attorney, Agent, or Firm—Lowe, Kokjer, Kircher, Wharton & Bowman

[57] **ABSTRACT**

A bracket for an electric trolling motor to be mounted on the bow of a fishing boat. The bracket includes a base member having a pair of upstanding C-shaped members on the forward end thereof. A pivot arm is hinged at the rear of the base and is equipped at the forward end with a trolling motor shaft holding bracket which is hinged for limited pivotal movement with respect to the arm. A remotely releasable latch is mounted on the forward end of the arm to lock the motor shaft in an operating position, but is releasable to permit movement of the trolling motor to a storage position wherein the motor shaft is horizontally disposed and the motor and prop unit is received by said C-members. In the storage position, a locking bolt eliminates movement of said arm relative to the base and in the operating position, a toggle biases the arm to engagement with the base.

5 Claims, 10 Drawing Figures



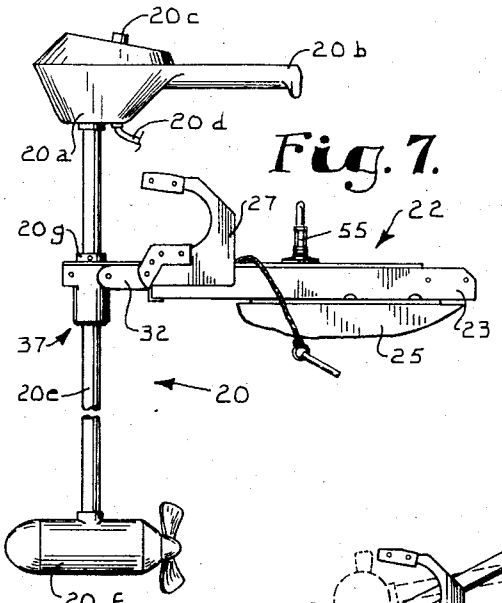


Fig. 7.

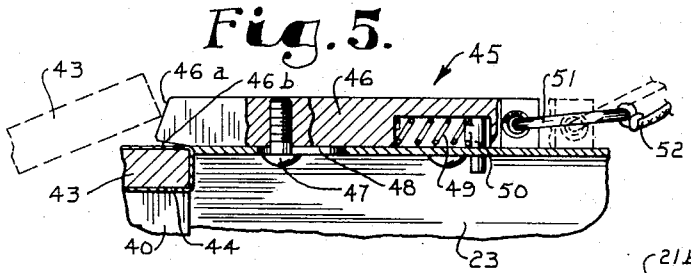


Fig. 5.

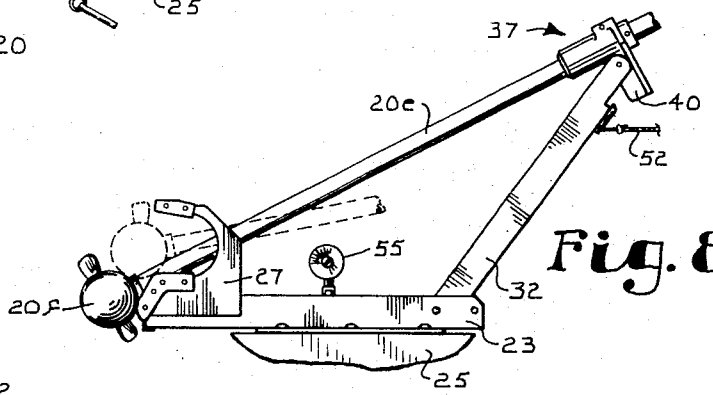


Fig. 8.

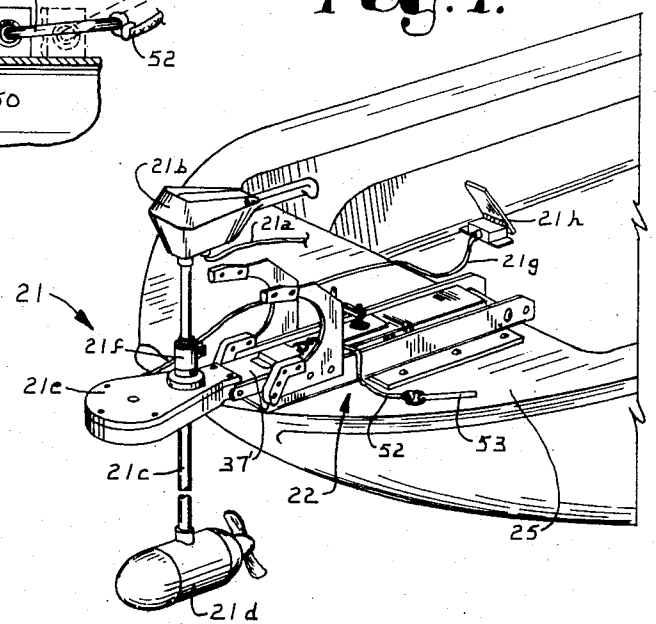


Fig. 1.

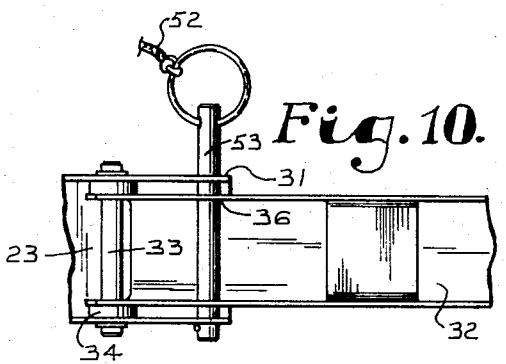


Fig. 10.

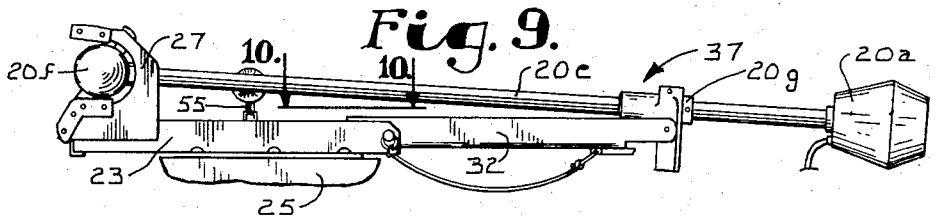
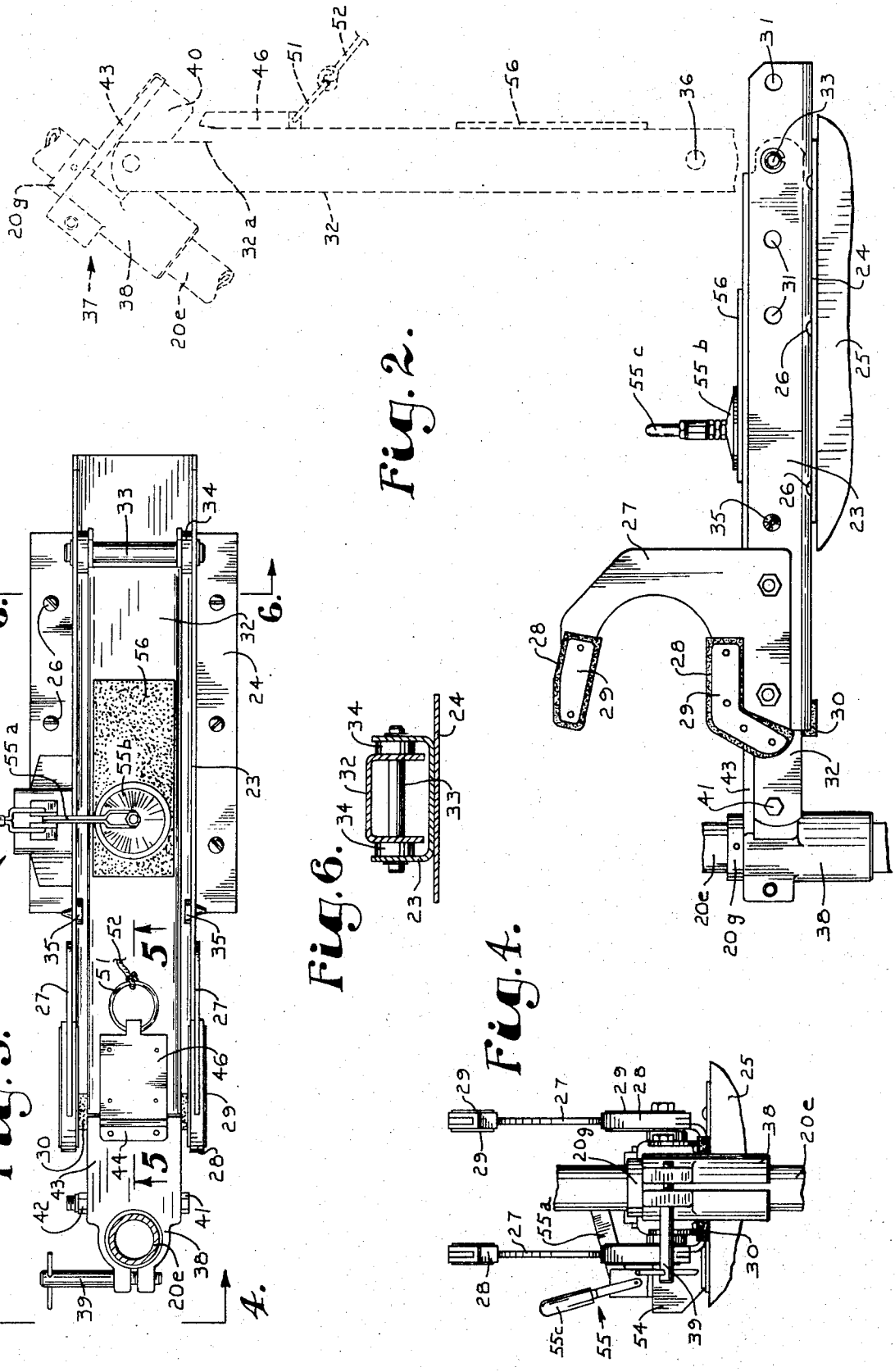


Fig. 9.


Fig. 2.
Fig. 3.
Fig. 4.
Fig. 6.

BOW BRACKET MOUNTING FOR AN ELECTRIC TROLLING MOTOR

BACKGROUND AND SUMMARY OF THE INVENTION

This invention relates to a bracket for mounting an outboard motor to a boat. More particularly, the invention relates to a bracket for mounting an electric trolling motor on the bow of a fishing boat.

In recent years, fishermen have come to rely on an electric outboard motor, generally known as a "trolling motor", for boating noiselessly through water without alarming wary fish. Power for these motors is commonly supplied by a direct current voltage source, such as a wet cell DC battery, carried aboard the boat.

Electric trolling motors of this type characteristically fall into one of two categories. The hand operated type of trolling motor includes an elongate shaft having a water tight DC motor equipped with a propeller on the work shaft. Electrical leads from the motor extend up through the shaft to a control lever having a handle for rotating the direction of the motor and having a switch and/or speed control for operating the motor. Electrical leads from the control handle are connected to the power source. The second type of trolling motor is commonly referred to as a remote control or foot operated trolling motor and enables the fisherman to have free use of his hands since directional control of the motor as well as on-off operation and/or speed control is accomplished by the foot acting on a pedal lever which has the necessary switch and any speed control associated therewith.

It is obviously desirable to mount either type of trolling motor onto the boat in such a manner as to enable the shaft and motor unit to be easily placed in the water and to permit removal from the water when it is necessary to employ the standard, combustion-type motor of the boat or when the boat is being transported off the water.

Various models and styles of mounting brackets for positioning a trolling motor in an extended, operating position or in a retracted, nonoperating position are commercially available. These brackets are normally referred to as bow brackets in view of the usual practice of mounting the brackets on the bow of the boat so that operation of the trolling motor may be controlled by a fisherman seated in the forward portion of the boat. The brackets heretofore available have not been without their drawbacks. One of the more serious problems found in commercial models is the tendency of the bracket to vibrate while in the retracted or storage position. In the retracted position, the trolling motor is normally stored on the bow of the boat and is therefore subjected to substantial jolting and pounding as the boat travels over the water. Vibrations of the trolling motor against the bracket and/or the boat itself occasionally damage this equipment. When the boat is trailered for transport on land, the trolling motor is normally retracted and is likewise subjected to extreme bumps and jolts and there have been instances of the trolling motor being blown or torn off of the boat during travel.

Another significant drawback of commercially available trolling motor brackets resides in the propensity to make noise during the operation of the motor. Although the electric motor itself is virtually noiseless during operation, there is an audible clicking or banging of the bracket when the trolling motor is lowered into the water from the storage position. This loud clattering is readily transmitted through the water to alarm any fish in the vicinity, thus defeating the purpose of noiseless operation of the electric motor. Also, it is a common practice among fishermen to intermittently, rather than continuously, operate the trolling motor while fishing. In other words, the motor is switched on and off several times rather than being turned on and left on. When the motor is turned on, the thrust of the prop, acting through the trolling motor shaft, causes the bracket to lurge, emitting an audible noise due to the vibration or play in the bracket. These sounds likewise frighten the fish and again can defeat the objective of silent operations.

Accordingly, there is a need in the industry for a trolling motor bracket which eliminates the foregoing defects characteristic of the commercial models heretofore available. The primary goal of this invention is to fulfill this need.

More particularly, an object of the invention is to provide a bracket for mounting an electric trolling motor on a boat and which is adapted to positively retain the trolling motor in a stored position in order to prevent vibrational damage to the equipment as the boat moves rapidly across the water or is transported overland. In the storage position, the bracket may be locked to prevent movement of the trolling motor from that position.

Another object of the invention is to provide a trolling motor bracket which enables the trolling motor to be noiselessly lowered into the water to an operating position from the retracted position.

Another object of the invention is to provide an electric trolling motor bracket which may be easily and conveniently employed to effect removal of the trolling motor from the water to a retracted position, all such action being accomplished by an operator seated behind the bracket. Furthermore, movement of the trolling motor to a storage position is carried out in one continuous motion without the need of loosening or tightening hand levers or thumb screws such as found on commercial models heretofore available.

An additional object of the invention is to provide an electric trolling motor bracket which may be firmly locked in an operating position and which is completely free of vibrational rattlings and clickings even during intermittent on-off switching of the trolling motor. Combined with the ability of the bracket to silently lower the trolling motor into the water, completely noiseless operation is assured to eliminate the possibility of sharp or metallic-like sounds which tend to alarm and frighten away the fish.

Yet another object of the invention is to provide an electric trolling motor bracket of the character described which is of durable and rugged construction and incorporates features which permit quiet operation throughout a long and useful service life. Biasing members which eliminate vibrational play in the bracket are provided with adjustments, wearing surfaces, and camming surfaces which insure positive latching and locking functions even when various parts of the bracket begin to wear after extended use.

A further object of the invention is to provide an electric trolling motor bracket of the foregoing character and which may be adapted for mounting an electric

trolling motor on a wide variety of boat designs. To provide a bracket of a versatile nature, adjustment is provided to vary the distance which the trolling motor extends outwardly from the boat in the operating position while still retaining the beneficial storage and noiseless operation features.

Yet a further object of the invention is to provide a trolling motor bracket of the foregoing nature which may be employed for use with hand operated or remote control types of electric trolling motors.

Other and further objects of the invention, together with the features of novelty appurtenant thereto, will appear in the course of the following description.

DESCRIPTION OF THE DRAWINGS

In the accompanying drawings which form a part of the specification and are to be read in conjunction therewith, and in which like reference numerals are employed to indicate like parts in the various views:

FIG. **1** is a perspective view of a remote control electric trolling motor installed on the bow of the boat by means of a bracket constructed in accordance with the principles of this invention;

FIG. **2** is a side elevational view of the bracket, the broken line view illustrating the position of the pivot arm rotated approximately 90° from the operating position;

FIG. **3** is a top plan view of the bracket in the operating position;

FIG. **4** is a front elevational view of the bracket taken generally along line **4—4** of FIG. **3** in the direction of the arrows;

FIG. **5** is an enlarged sectional and fragmentary view of the latching mechanism taken along line **5—5** of FIG. **3** in the direction of the arrows;

FIG. **6** is a sectional view taken along line **6—6** of FIG. **3** in the direction of the arrows;

FIG. **7** is a side elevational view of the bracket with a hand operated trolling motor in the extended or operating position;

FIG. **8** is a side elevational view of the bracket and motor in a semi-retracted position from that shown in FIG. **7**;

FIG. **9** is a side elevational view of the bracket and motor in the fully retracted or storage position; and

FIG. **10** is an enlarged, fragmentary plan view of the storage locking members taken along line **10—10** of FIG. **9** in the direction of the arrows.

Illustrated in the drawings are electric trolling motors of conventional types. The hand operated model **20**, such as shown in FIG. **7**, includes a control housing **20***a* having a lever **20***b* for controlling the direction of the motor and such additional controls as an on-off switch **20***c* and, if the model is so equipped, controls for varying the speed of the motor. Electrical leads **20***d* from the housing **20***a* may be connected to a power supply such as a DC battery (not shown). An elongate shaft **20***e* extends from the housing **20***a* and is connected to motor and propeller unit **20***f*. A slidable split collar **20***g* encircling the motor shaft **20***e* may be securely fixed at any position on the shaft **20***e* in order to vary the depth to which the motor **20***f* extends into the water.

In the remote control model **21** as shown in FIG. **1**, the motor likewise includes an electrical lead **21***a* from the upper housing **21***b* which may be connected to a battery power source and an elongate shaft **21***c* which has mounted on its end an electric motor and propeller unit **21***d*. However, unlike the hand operated model **20**, the remote control model **21** is fitted with a directional control housing **21***e* having a rotatable collar **21***f* which receives the motor shaft **21***c*. The shaft **21***c* is releasably secured by the collar **21***f* to vary the depth to which the motor **21***d* extends into the water. A cable **21***g* leads from the control housing **21***e* to a foot pedal mechanism **21***h* which may be depressed by the operator seated in the boat in order to cause the collar **21***f* to rotate and thus vary the direction of the motor **21***d*. The foot control mechanism **21***h* is also equipped with an on-off switch which may be depressed in order to activate the motor **21***d*. With this model **21**, both the on-off operation as well as directional control may be accomplished by the foot of the operator.

Referring to the drawings with respect to the bow bracket **22** itself, the bracket includes a base portion having an elongate, upturned channel member **23** with a flange plate **24** connected on the undersurface and which is secured to the bow of the boat **25** by a plurality of bolts or screws **26**. In the latter regard, it is customary to mount trolling motors on the bow of a boat. Nevertheless, the bracket herein disclosed may be mounted at other locations in the boat if desired, such as at the stern or along the sides.

Mounted on the forward end of the base channel **23** by means of bolts, nuts and locking washers are a pair of upstanding C-shaped members **27**. One such C-member **27** is mounted on each vertical side portion of the base channel **23** and is so oriented that the mouth of the C opens in a direction forwardly and outwardly of the base channel **23**. The motor engaging edges of the C-members **27** are covered with resilient padding **28** such as a rubber or flexible synthetic composition. The padding **28** is secured to each C-member **27** by side plates **29** which are riveted together as shown in FIG. **2**. The forward edge of the exposed base channel **23** is also covered by a resilient protector strip **30**.

Toward the rearward portion of the base channel **23**, a plurality of paired holes **31** are provided in the vertical side walls of the base channel **23**. Each pair of holes **31** are laterally aligned through the base channel **23** and successive pairs of holes **31** are longitudinally spaced apart a uniform and preselected distance.

Received between the vertical side walls of the base channel **23** is an elongate pivot arm **32** which is formed of channel stock and is inverted with respect to the base channel **23**, as shown in FIG. **6**. The rearward end of the arm **32** is hingedly connected to the base channel **23** by a shaft **33** which extends through the second pair of holes **31** from the end pair in the base channel **23** and through a first pair of holes (not shown) in the end of the pivot arm **32**. As shown in FIGS. **3** and **6**, spacer blocks **34** are disposed between the vertical walls of the arm **32** and the base channel **23** to keep the pivot arm **32** centrally aligned in the base channel **23**. Rubber grommets **35** installed in the side walls of the base channel **23** also assist in alignment of the arm **32**. A second pair of holes **36** extend through the side walls of the pivot arm **32** (see broken line view of FIG. **2**) and are spaced apart from the first pair of holes near the end of said arm **32** a distance equivalent to the spacing of the hole pairs **31** in the base channel **23**.

On the outer end of the pivot arm **32** a motor shaft clamp **37** is releasably hinged for limited pivotal movement with respect to the arm **32**. Illustrated in FIGS. **2**, 3, 4, 7, 8 and **9** is a shaft clamp **37** for a hand operated

electric trolling motor **20**. FIG. **1** illustrates the retaining member **37'** for a remote control trolling motor **21**.

First, with respect to the hand operated trolling motor **20**, the shaft clamp **37** comprises a split bearing sleeve **38** which receives the shaft **20***e* of the trolling motor **20** and which is fitted with a hand lever **39** for tightening the sleeve **38** to grip the motor shaft **20***e*. A projection **40** to the rear of the bearing sleeve **38** is pivotally pinned to the pivot arm **32** by a bolt **41** with an elastic self-locking stop nut **42** (FIG. **3**). The rear projection **40** of the shaft clamp **37** forms an overlying shelf **43** which mates with a notched out portion **32***a* in the forward end of the arm **32** (FIG. **8**) so that the top surface of the arm **23** and the top surface of the shelf **43** are flush when the clamp **37** is locked in the operating position (FIG. **5**). The back edge of the shelf **43** is covered by a wear plate **44** riveted through the shelf portion.

Rearwardly of the notched out portion **32***a* in the upper surface of the arm **32** is disposed a releasable latch **45** for retaining the motor shaft clamp **37** in a locked position. As shown in FIG. **5**, the latch **45** includes a plate **46** installed on the upper surface of the arm **32** for limited movement. The plate **46** is connected by screw members **47** which are received in elongate slots **48** permitting forward and backward movement of the plate **46**. A recess in the underside of plate **46** receives a compression spring **49** which operates against a stop **50** attached to the arm **32** to bias the plate **46** to a forward position extending over the upper edge of the arm **32**. A ring **51** is connected to the rear of the plate **46** and is equipped with a length of rope or cord **52** providing a pull. The free end of the pull **52** is tied to a hitch pin **53** of essentially the same diameter as the holes **31** in the base **23** and the holes **36** in the arm **32**.

The forward face **46***a* of the plate **46** is inclined for engagement with the shelf portion of the shaft clamp **37** (FIG. **5** broken line view) to permit the plate to be moved against the action of the spring when the retaining member is rotated to the latched position. The under surface **46***b* of the plate **46**, which extends outwardly into the notched out portion **32***a* of the arm **32**, is slightly tapered to provide a camming surface for engagement with wear plate **44** mounted on the edge of the shelf **43**.

With respect to the remote control model **21**, the control cable housing **21***e* is fitted with a rearwardly extending projection which is pivotally connected to the forward end of the pivot arm **32** and has a shelf member which overlies the notched out portion of the pivot arm in the same manner and in identical construction as previously described with reference to the shaft clamp **37** for holding the motor shaft of the foregoing hand operated trolling motor.

Mounted alongside the base channel **23** by means of a fixed platform member **54** is a toggle clamp **55** having an arm **55***a* on which is adjustably mounted a compression foot **55***b* adapted to engage a resilient compression pad **56** secured on the upper surface of the pivot arm **32**. The hand lever **55***c* of the toggle clamp **55** may be employed to biasingly lock the foot **55***b* to engagement with the compression pad **56** when the pivot arm **32** is rotated to the extended, operating position. Alternatively, the lever **55***c* is adapted to rotate the compression foot **55***b* to the side in order to permit raising of the pivot arm **32**.

In order to fully utilize the operational capabilities of the bow mounted electric trolling motor bracket disclosed herein, it is first necessary to adjust the bracket to the physical characteristics of the specific trolling motor to be used. Basically, in the case of the hand operated trolling motor **20**, this requires adapting the distance between the depth control collar **20***g* on the motor shaft **20***e* and the motor unit **20***f* to match the distance between the C-shaped members **27** and the end of the pivot arm **32** when the pivot arm is disposed in the storage position (i.e., being rotated approximately 180° from the operating position as shown in FIG. **9**). This adjustment may be easily effected by positioning the pivot arm **33** in the storage position and locking the pivot arm **32** in such position by inserting the hitch pin **53** through the holes **31** in the base channel **23** and the holes **36** in the pivot arm **32** as shown in FIG. **10**. The motor and prop unit **20***f* is then snugly nested in the mouth of the C-members **27** and the loosened collar **20***g* is pushed against the upper surface of the bearing sleeve **38** and secured in place by tightening the bolts or set screws associated with the collar.

At this point, it should be noted that the distance which the motor and prop unit **20***f* extends into the water is determined by the distance between the C-clamps **27** and the shaft clamp **37**. This distance may be varied, however, by moving the pivot point of the arm **32** closer to the C-members **27** in order to shorten the distance the motor **20***f* extends into the water. Such may be accomplished by removing the pin **33** extending through the second inward pair of holes **31** in the base channel **23** and through the endmost set of holes in the pivot arm **32** and remounting the pivot arm **32** in a pair of holes **31** closer to the C-clamps **27**. It will also be noted that this adjustment, in effect, additionally causes the end of the pivot arm **32** on which the trolling motor is mounted to extend out from the boat a greater distance.

From the storage position as indicated in FIG. **9**, should it be desirable to move the trolling motor **20** to the operating position, one need only remove the hitch pin **53** from the aligned holes **31** and **36** of the base channel **23** and pivot arm **32** and rotate the pivot arm **32** approximately 180° and to lock the shaft clamp **37** underneath the latch member **45**. The latter operation is accomplished simply by rotating the shaft clamp assembly **37**, which may be achieved by a rearward force applied to the control head **20***a* of the trolling motor which, in turn, causes the lower edge of the shelf **43** to engage the inclined front surface **46***a* of the plate **46** (broken line view in FIG. **5**) and to move the plate **46** against the force of the spring **49** until the shelf **43** passes the plate **46**. Acting under the force of the spring **49**, the plate **46** then moves forward to engage the upper edge or wearing plate **44** of the shelf **43**. Any play or looseness in the engagement between the pivot arm **32** and the shaft clamp **37** causes the latch plate **46** to move forward under the influence of the spring **49** and to further snugly engage the shelf **43** by the camming surface **46***b* in order to eliminate vibration between the parts.

When the pivot arm **32** is disposed in the operating position, the toggle clamp **55** may be locked in place to bias the pivot arm **32** to snug engagement with the channel member **23**.

Normal operation of the hand operated trolling motor **20** is now carried out including the normal start

and stop actuation of the motor **20***f*, as well as speed variation if the motor is so equipped, and directional control accomplished by the movement of the hand lever **20***b*. Should it be desirable to temporarily lock the motor in a specific direction, the hand lever **39** associated with the split sleeve bearing **38** may be tightened against the motor shaft **20***e* so as to prevent rotation. If it is then desirable to manually control the direction of the motor **20***f*, one needs only loosen the hand lever **39** to resume normal operation and to permit rotation of the motor shaft **20***e* within the bearing sleeve **38.**

In the event it is desired to move the trolling motor **20** to the stored position, as for example when changing general fishing locations requiring the need of the normal combustion type motor of the boat, one need only rotate the toggle clamp **55** to the side and then grasp the pull cord **52** and supply a rearward force which removes the latch plate **46** from engagement with the shelf area **43** of the shaft clamp **37,** thus causing the motor shaft **20***e* to pivot inwardly and the shelf member **43** to pivot out of engaging alignment with the latch, while simultaneously supplying an upwardly rotational force to the forward end of the pivot arm **32.** As the pivot arm **32** is rotationally lifted in an arc, the shaft **20***e* of the trolling motor engages the forward padded edge of the base channel **23.** The arm **32** is pivoted to the rear until the motor housing **20***f* engages the rounded shoulder of the C-member **27** causing the motor **20***f* to ride upwardly into the mouth of the C-clamps **27.** The motor housing **20***f* is snugged to engagement with the C-clamps **27** when the pivot arm **32** is fully rotated to the stored position (approximately 180° from the operating position). The bracket **22** may be left in the storage position as described until it is desirable to again deploy the trolling motor **20** to the operative position. If the water is extremely rough or the boat is being transported on land, it is desirable to insert the hitch pin **53** in the aligned holes **31** and **36** of the base channel **23** and pivot arm **32** in order to prevent pivoting of the arm **32** due to bumps and bouncing.

Both the initial adjustments to and operational aspects of the bracket **22** mounting a remote control type of trolling motor **21** are essentially the same as that described with reference to the hand operated model **20.** The only difference, of course, resides in the characteristic features of the remote control unit **21.** Specifically, the control housing **21***e*, well familiar to those skilled in this art, is adapted to pivot on the forward end of the pivot arm **32** and is equipped with a projection **37'** having a shelf area which overlies the notched out portion **32***a* of the arm **32** as previously described with respect to the rear projection of the shaft clamp **37.**

It should be readily apparent that in the stored position, the motor and propeller unit is securely retained in the mouth of the C-clamps and is cushioned therein by means of engagement with the resilient pads in order to prevent damage to the motor or housing. When the motor is locked in the stored position by means of the removable hitch pin, the possibility of accidental rotation of the bracket or displacement of the trolling motor is completely eliminated, to ensure safe, damage free transit.

It should also be noted that various features of the bracket are specifically designed to ensure silent operations during fishing conditions. This is evident not only in lowering and raising of the motor in the water, but also in the on-off switching of the electric motor itself. When the motor is lowered into the water, the pivot arm engages the resilient pad and quiet alignment between the vertical walls of the base channel is assured by virtue of the guiding and spacing grommets located between the side walls of the pivot arm and the base channel. No metal to metal contact is required in dropping the pivot arm onto the base channel. Vibrational noises caused by play in the bracket are completely eliminated in this design. It is noted that the toggle clamp biases the pivot arm to engagement between the resilient pad mounted on the forward edge of the base channel and the compression pad engaging the toggle clamp on top of the pivot arm and therefore, play or looseness between the base channel and the pivot arm is eliminated. Likewise, play or looseness between the motor shaft retaining assembly **37** or **37'** and the pivot arm is eliminated by the camming action of the latch plate which works to tighten engagement with the shelf area.

From the foregoing, it will be seen that this invention is one well adapted to attain all the ends and objects hereinabove set forth together with other advantages which are obvious and which are inherent to the structure.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

Since many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described our invention, we claim:

1. A bracket for mounting on a boat an outboard motor having an elongate shaft with a water submergible propeller unit on the lower end thereof, said bracket comprising:

a base attachable to said boat;

an upstanding propeller unit holding assembly mounted on said base and adapted to hold said propeller unit in an out-of-water storage position, said assembly including a pair of upstanding C-shaped members, one of which being disposed on each side of the elongate motor shaft, having a cushioningly padded exposed edge to protectively receive the propeller unit in the storage condition;

a pivot arm hingedly connected to said base;

a motor shaft retaining member mounted on said pivot arm for limited pivotal movement with respect thereto and adapted to adjustably hold the elongate shaft of said motor;

a releasable latch connected to said pivot arm and engageable with said retaining member for locking the position of the retaining member with respect to said pivot arm;

said bracket being positionable to an operating condition whereby said latch locks the retaining member to the pivot arm and said pivot arm carries the shaft of the motor in a substantially vertical orientation and being further positionable, upon release of said latch, to a storage condition whereby said pivot arm rotates from said operating condition to carry the shaft of the motor in a substantially hori-

zontal orientation with said propeller unit securely held by said propeller unit holding assembly.

2. The bracket of claim 1 including an adjustable and releasable locking member attached to said base for biasingly securing said pivot arm in said operating condition.

3. The bracket of claim 1 including a storage lock member associated with said base and pivot arm to securely retain said pivot arm in said storage condition.

4. The bracket of claim 1, said pivot arm operable to pivot substantially 180° with respect to said base and said retaining member operable, upon release of said latch, to pivot substantially 90° with respect to said pivot arm.

5. The bracket as in claim 1, said releasable latch including a spring plate biased to engagement with said shaft retaining member when disposed in said operating condition, said plate having a first inclined surface for engaging said shaft retaining member disposed in said operating condition to prevent looseness of fit and having a second inclined surface engageable by said shaft retaining member pivoted from the storage condition to the operating condition to move said plate to admit said shaft retaining member to said operating condition.

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