Aug. 25, 1959 H. W. SHONTZ 2,901,194

OUTBOARD MOTOR LIFT

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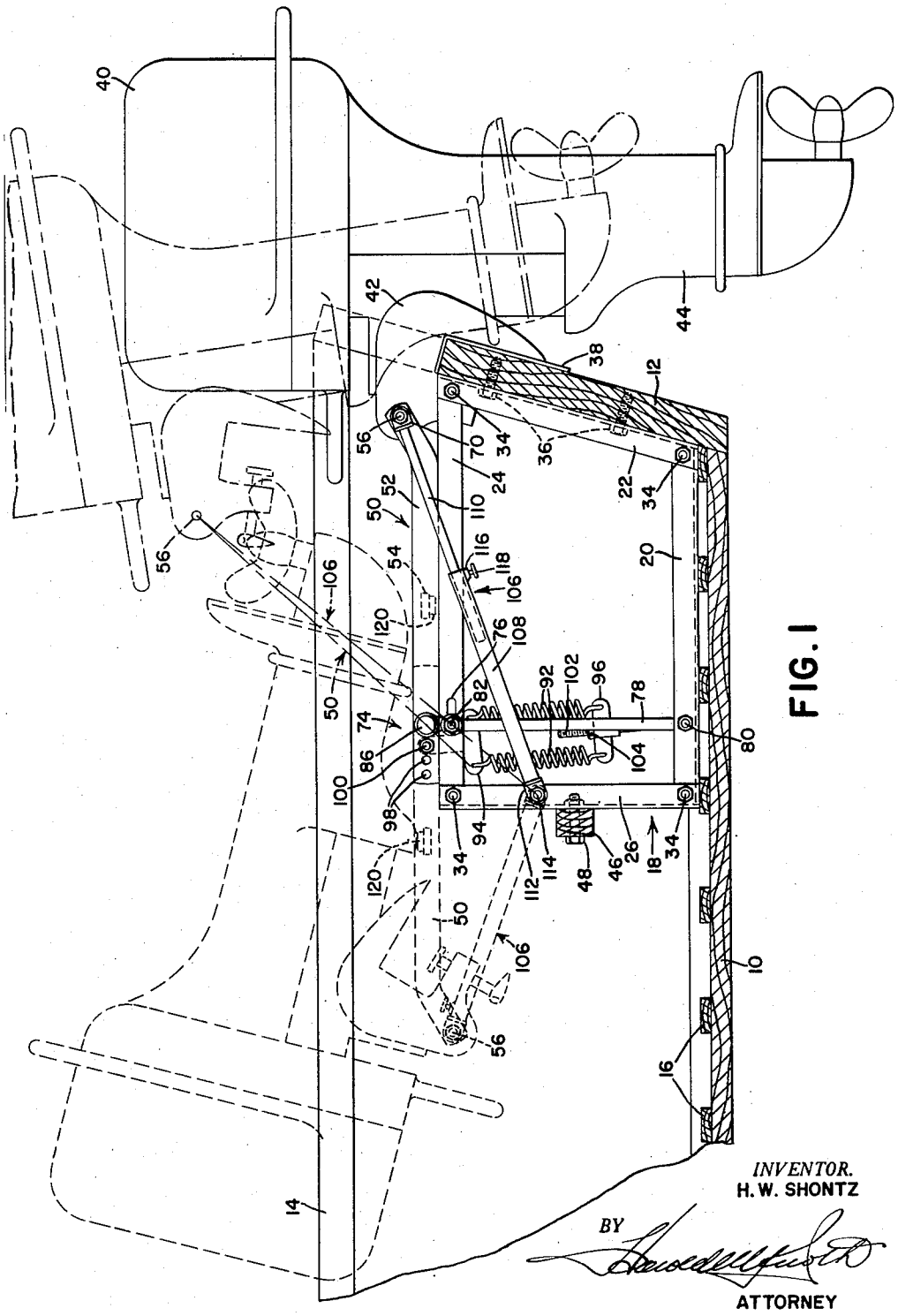


FIG. 1

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FIG. 2

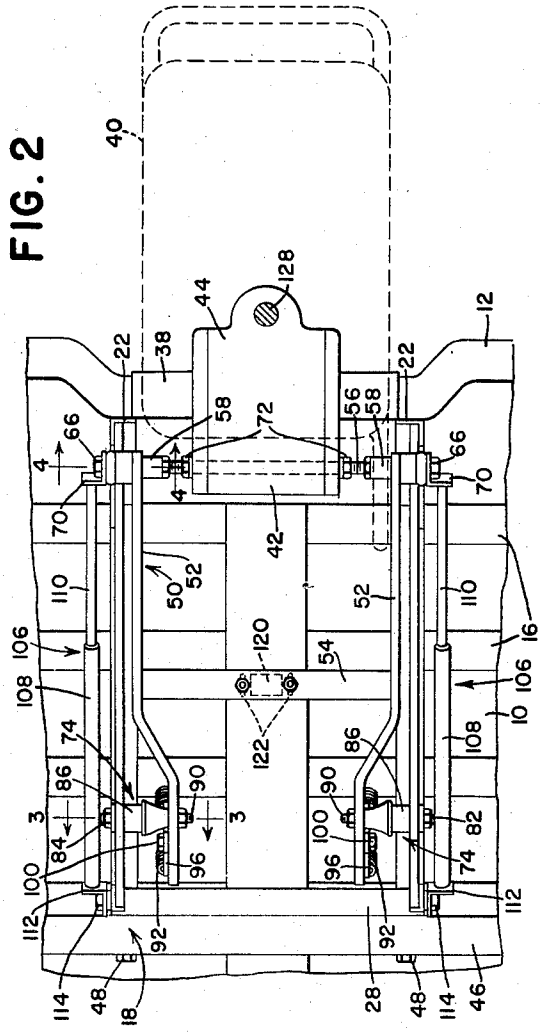


FIG. 5

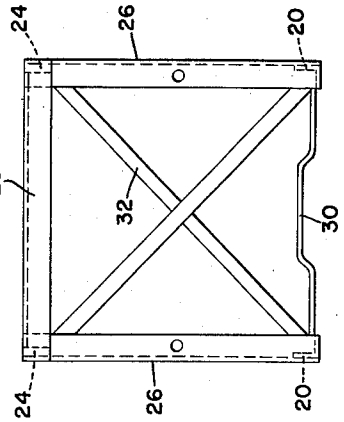


FIG. 7

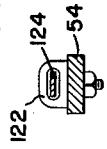


FIG. 6

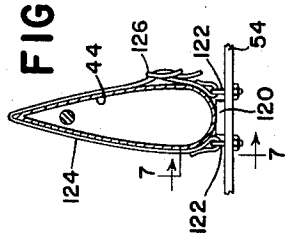


FIG. 3

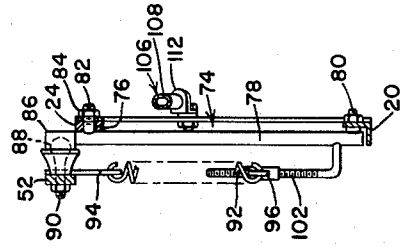
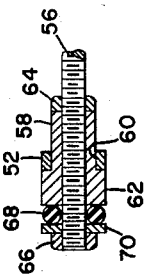


FIG. 4



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2,901,194

OUTBOARD MOTOR LIFT

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Application October 1, 1956, Serial No. 613,335
10 Claims. (Cl. 248—4)

This invention relates to the outboard-motor-equipped boat art and more particularly to a lift or transport mechanism for facilitating the positioning or handling of an outboard motor while in situ on the boat. Still more particularly, the invention constitutes an improvement over the basic design that forms the subject matter of my copending application Serial No. 562,812, filed Feb. 1, 1956, now matured as U.S. Patent No. 2,859,929.

In a typical outboard-motor-equipped boat, the motor is carried in a normal operating position at the rear end or transom of the boat and ordinarily cannot be moved from this position except by complete removal, barring limited tilting of the motor for propeller angle, to accommodate shallows, etc. Hence, when the boat is to be transported, as on a vehicle-drawn trailer, for example, the motor must be bodily removed and either placed inside the boat or otherwise carried. In some instances in transport the motor is tilted upwardly and rearwardly about the conventional pivot provided between the motor itself and the motor mounting clamp which secures the motor to the transom, but even then the motor must have additional support directly to the trailer, since the transom cannot take the forces and shocks imposed during travel of the boat and trailer over roads and highways.

According to the present invention, these disadvantages, among others, are eliminated by the provision of a novel motor-handling mechanism which is capable of effecting movement of the motor between its normal operating position and a storage position inboard or within the boat, all with a minimum of manual labor and without disturbing the actual potential locational relationship of the motor to the boat. A principal feature of the invention resides in lift or transport mechanism supported on the boat and engaging the normally positioned motor without in any way adversely affecting normal operation of the boat or motor, yet which mechanism, by proper manipulation and with very little manual effort, is capable of carrying the motor easily and quickly to a storage position, in which latter position the motor may be safely transported, brought into the boat for inspection, adjustment, etc.

It is a significant object of the present invention to provide a novel support structure capable of occupying a relatively small amount of space at the rear end of the boat. A further feature of this support is that it includes frame or support elements that are angularly adjustable to accommodate different angles between floors and transoms in different makes and types of boats, thus enabling use of the same basic structure in any of a wide variety of boats. Still another feature is the improvement of the mounting of the motor-carrying or shiftable means for fore-and-aft adjustment on the support structure. An important object resides in novel brace means capable of extension and retraction as the motor shifts from operating position to transport position, which means is further capable of selective locking to secure either of said positions or a variety of intermediate positions. The shiftable means features motor-receiving means thereon for stably supporting the motor in its transport position. Other objects will be found to be accomplished in the novel and inexpensive construction, the facility of operation and maintenance of the mechanism, the adjustability thereof to accommodate boats of different sizes and motors of different weights, and such other significant objects and features as are inherent in and encompassed by the invention as will be disclosed in detail in the ensuing specification and accompanying sheets of drawings, the several figures of which are described immediately below.

Figure 1 is a plan view of the improved mechanism, illustrating also the rear end portion of the boat and with the motor partly in section.

Figure 2 is an elevation of the mechanism, with the boat in longitudinal section.

Figure 3 is a section on the line 3—3 of Figure 2.

Figure 4 is an enlarged fragmentary section on the line 4—4 of Figure 2.

Figure 5 is a front view of the frame structure per se.

Figure 6 is an enlarged view illustrating the motor-receiving means.

Figure 7 is a section on the line 7—7 of Figure 6.

Only enough of the rear portion of a typical boat or craft is illustrated to orient the invention, and those familiar with the art will recognize the boat as including a floor means or bottom **10**, a rear end or transom **12** and opposite sides **14**. The floor conventionally includes cross strips **16**, and the transom conventionally occupies an obtuse angle relative to the floor **10**, which angle will be found to vary from boat to boat, according to make and style. In a broad sense, the floor and transom represent angularly related support-receiving boat portions with which the novel support structure, designated in its entirety at **18**, is associated.

The support structure is in the form of a skeletal frame means made up of base or lower elements **20**, generally upright but rearwardly inclined rear elements **22**, upright front elements **26** and top or upper elements **24**. Thus, at each side of the structure **18** four elements, comprising one each of the elements **20**, **22**, **24** and **26**, afford a polygonal (here trapezoidal) side frame, and these two side frames are rigidly cross-connected at their front ends via the front uprights **26** and top and bottom cross members **28** and **30** and cross braces **32**. The side frame elements are joined at their respective corners or junctions by releasable fasteners in the form of bolts and nuts **34** so that the support may be adjusted fore-and-aft to change the angle between each bottom element **20** and its rear element **22**. Thus, when the support or frame is placed in position in the boat, the angle just referred to will accommodate the angle between the floor **10** and the transom **12**, after which the nuts and bolts **34** are securely tightened. As will be seen, the bottom of the frame rests on or is received by or rests on the boat floor **10** and the rear elements rest against or are received by the front face of the transom **12**. Securing or affixing means, here long bolts **36**, are passed through the transom and through the rear elements **22**. A metal plate **38** may be used over the top and rear portions of the transom and the bolts **36** may pass therethrough. This plate is normally present to receive and mount the motor, here shown at **40** as of conventional style and having a transom-receiving clamp **42** by means of which the motor is disposed behind the transom in its conventional operating position, the elongated housing **44** of the motor depending below the clamp to operate in the water.

Additional affixation of the frame **18** is afforded by an added cross member **46**, preferably of wood and rigidly secured at its opposite ends to the sides of the

boat so as to extend across the boat immediately ahead of the frame. The front elements **26** of the frame or support are secured to this cross member as by bolts **48**. The transverse dimension of the support is such that it occupies only a relatively small central portion of the boat just ahead of the transom **12** and, as has already been covered, the support is adjustable to fit any boat regardless of variations in angle between the floor and transom. If desired, fasteners in addition to or other than those shown at **36** and **48** may be used, but the arrangement shown will be found acceptable as a practicable design. Another thing about the support or frame structure: its height is such that its top members or bars **24** are generally at the level of or in the horizontal plane of the top edge of the transom **12** so as to facilitate cooperation between the support, the motor **40** and shiftable means **50** capable of effecting movement of the motor between its operating position as shown in full lines in Fig. 2 to a storage position within the boat as shown in dotted lines in that figure. The shiftable or motor-carrying means **50** will now be described.

This means, as viewed from above, has the appearance of the letter H, having fore-and-aft side bars or arm elements **52** and a rigid cross member **54**. These arms are laterally and symmetrically offset so as to operate within the vertical planes of the opposite sides of the structure **18** and the rear ends of the arms have a motor-engaging part in the form of a cross shaft **56** which passes through the motor clamp. In the conventional motor, the motor housing **44** is mounted on the clamp **42** by a cross shaft which serves as a pivot, but in the interests of facilitating the mounting of the motor on the present mechanism, this cross shaft is removed and replaced with the present and longer shaft **56**, which spans the arm elements **52** and which is secured to the rear ends of those arms by means best shown in Figure 4. This means includes, at each end of the shaft, an internally threaded collar **58** which is threaded on the shaft and which passes through an opening **60** in the arm. The collar is hexagonally headed at **62** to abut the outer side of the arm **52** and a lock nut **64** threads on the shaft and secures the position of the collar. An outer nut **66** confines an elastomer spacer **68** between the collar head **62** and an angle member **70**. The arrangement is the same at the other end of the shaft. The intermediate portion of the shaft carries a pair of jam nuts **72**, one at each side of the motor clamp **42**, and these secure the central position of the motor **40**. The shaft **56** affords a pivot on a transverse axis about which the motor may swing bodily fore-and-aft relative to the shiftable means **50**, for purposes to be described below. Also, the motor may swing about the shaft **56** relative to the clamp **42** for conventional purposes. When the motor is in its operating position, it is of course clamped securely to the transom **12**. The side bars or arm elements **52** are kicked up at their rear ends to place the shaft **56** properly as respects the motor clamp **42**.

The fore parts of the arm elements **52** are movably mounted on the upper bars or elements **24** of the frame **18** by mounting means **74** (see Fig. 3), each of which is fore-and-aft adjustable via a slot **76** in the top frame element **24**. Each mounting means **74** comprises an upright member or rod **78** having its lower end pivoted to the lower frame element **20** at **80** and having an upper end portion provided with a threaded stud **82** which passes through the slot **76** to receive a nut **84**. When the nut **84** is loosened, the means **74** may be moved fore-and-aft along the slot **76**, thus varying the distance thereof from the transom **12**. Each rod has at its terminal upper end a joint member **86**, preferably including a ball and socket **88** to accommodate minor variations in manufacture. The joints **86** of the two means **74** are transversely alined and afford a transverse pivot on which the shiftable means arm elements **52** are carried by studs **90** included in the balls and sockets **88**. Thus the shiftable means is swingable from a rear position, in which it is connected to the operatively positioned motor via the cross shaft **56**, to a front position (dotted lines, Fig. 2) in which it remains connected to the motor as before, hence being operative to shift the motor between its operating and transport positions.

Ready shifting of the mechanism and motor supported thereby is achieved by the use of counterbalance springs **92**, two being used, preferably, at each side of the mechanism. Each pair of springs is connected at their upper and lower ends respectively to upper and lower T's or equalizers **94** and **96**, the former being selectively connected to any one of a plurality of holes **98** in the arm element **52** via a connector pin **100** and the latter being received by a threaded rod **102** which carries an adjusting nut **104** and which is secured to the lower part of the upright rod **78**, (Figure 3). Selection of the hole **98** to which the upper T **94** is connected will depend upon the weight of the motor to be counterbalanced and the nut **104** is used to adjust the tension on the springs. As the mechanism swings between its front and rear positions, the line of force exerted by the springs shifts to opposite sides of the pivot axis through **86—86**. The rods **78** counteract the spring load between the frame elements **20** and **24** and prevent bending of these elements.

A further feature of the invention is the provision at each side of the mechanism of novel brace or control means **106**. Each means is lockable to serve as brace but is selectively extensible and retractible or otherwise capable of lengthening and shortening, and comprises a tubular member **108** and a telescopically received rod **110**. The rod **110** is rigidly secured to the previously described angle member **70** at the proximate end of the motor-receiving shaft **56** and the tubular member **108** is rigidly secured to a similar angle member **112** which is pivoted at **114** to the front upright **26** of the proximate side of the structure **18**. This pivot is below the pivot axis at **86—86** and the arrangement is such that the brace means forms one side of a triangle having apices at **114**, **86** and **56**, but this one side is capable of changes in length as the mechanism swings through the range defined between its front and rear positions, the rod **110** sliding in the tubular member **108**. The lengths of the members **108** and **110** may be such that when the mechanism is in its front position the members interengage and form stops defining that position. In addition to those stops, the arm elements **52** of the shiftable means **50** will engage the top of the top cross member **28** of the frame **18**. Of greater importance, however, is that the tubular member **108** is provided with an internally threaded projecting lug **116** which receives a thumb screw **118** that may be selectively tightened and loosened to respectively engage and release the slidable rib **110**. Hence the releasable locking means thus afforded is applicable to lock the brace means **106** in any selected position of extension and retraction and may thus stop movement of the shiftable means **52** in any intermediate position, which is useful in draining, repairing, adjusting, etc. the motor **40** (dot-dash lines, Figure 2).

From the description thus far, it will be seen that during normal operation the arm means is in its rear position and the motor is clamped to the transom **12** by its clamp **42**. Hence, the motor at this time assumes its conventional relationship to the boat. However, the lift or shifting mechanism is extremely important in swinging the motor from the operating position to the storage or transport position and return. The first step in preparing the motor for movement to its storage position, or any position ahead of its operating position, is to release the clamp **42**. The motor of course remains connected to the shaft **56**. Now, as the lift mechanism or shiftable means swings from its rear position to its front position, the motor **40**, carried by the shaft **56**, can pivot fore-and-aft and is thus able to clear the transom **12**. As the mechanism approaches its vertical position, the motor

40 will depend from the shaft **56** and will lie directly behind the now upright means **50**. In other words, the bottom of the cross bar 54 between the arm elements **52** will now face the rear and is thus in a position to be contacted by the front edge of the motor housing **44**. For this purpose, the bar **54** is provided with motor-receiving means in the form of a rubber pad **120** and a pair of spaced eyes **122** which receive a strap **124** and buckle **126** (Figures 6 and 7). Now, as the mechanism and motor continue forwardly, the motor housing will rest on the pad **120** and the strap and buckle may be used to tie down the motor, thus stably supporting the motor on the cross bar **54** as well as via the shaft **56**. This is significant not only in keeping the motor from bouncing but also for preventing it from swinging about its usual vertical steering pivot as at **128**. It will be understood of course that when the mechanism is in its forward position, the lock means **116—118** on the brace means **106** are secured to hold the mechanism from undesirable upward movement and jouncing.

It is deemed that the use and operation of the invention are clear from the foregoing and that it will suffice to refer only briefly to the accomplishment of the aforesaid objects and features by the presently preferred structure disclosed here. For example, the frame or mounting structure, being adjustable, will fit any boat. Since it is compact and rugged, it occupies but a small amount of space and its long life and efficiency are assured. The lockable brace means affords releasable lock structure for securing not only the front and rear positions described but also an infinite number of intermediate positions. The ready adaptability of the cross shaft **56** to any of the wide variety of standard outboard motors is also of benefit to the manufacturer, distributor and user, in which regard it should be noted that the motor may be readily dismounted from the shiftable means **52** by merely removing the outer lock nuts **66**, angles **70** and spacers **68** and unthreading the collars **58**, after which lateral shifting of the motor, still mounted on the rod **56**, will release the motor. Since the shaft **56** is slidably and thus pivotally received by the motor clamp, it operates as a pivot when in use, but it may be readily moved by removing one of the inner jam nuts **72** and withdrawing the shaft, after which it may be replaced by the original shaft in the event that it is required or desired that the motor be used elsewhere.

Features of the invention not categorically elaborated will readily occur to those versed in the art, as will modifications in the preferred embodiment disclosed, all of which may be achieved without departure from the spirit and scope of the invention.

What is claimed is:

1. For a boat having floor means and a transom and an outboard motor having an operating position behind the transom: mechanism for moving the motor selectively between said operating position and a storage position ahead of the transom and within the boat, comprising support structure having a lower frame element mountable on the floor means of the boat, a rear frame element rising from the lower frame element and mountable against the front of the transom, and an upper frame element extending forwardly from said rear element, means interconnecting said lower and rear elements for relative angular adjustment to accommodate the angle between the floor means and the transom; shiftable means normally occupying a rear position and having a rear part proximate to the operatively positioned motor and a forward part adjacent to a portion of the support structure ahead of the transom; motor-engaging means on said rear part for supporting the motor; and mounting means relatively movable connecting said forward part of the shiftable means to said forward portion of the support structure for enabling forward shifting of the shiftable means and supported motor to a forward position for disposing the motor in said storage position and for returning the motor to its operating position.

2. The invention defined in claim 1, in which: the mounting means includes an adjustable connection to the support structure providing for fore-and-aft of said mounting means to vary the distance between said mounting means and the rear frame element.

3. The invention defined in claim 1, in which: the shiftable means comprises an arm element; the mounting means includes a pivot on a transverse axis whereby the arm element swings upwardly and forwardly from its rear position to its forward position and vice versa; the motor-engaging means includes a transverse pivot from which the motor depends and about which the motor is swingable fore-and-aft as it moves with the arm element; and the arm element has means thereon spaced from the motor-engaging means for receiving a lower portion of the motor upon swinging of the arm means to its forward position whereby to stably support the motor in its storage position.

4. The invention defined in claim 3, including: selectively extensible and retractible brace means connected to the arm element in spaced relation to the mounting means pivot and connected to the support structure also in spaced relation to said mounting means pivot, said brace means extending and retracting as the arm element swings; and releasable means for securing the brace means against extension and retraction to lock the arm element against swinging.

5. For a boat having floor means and a transom and an outboard motor having an operating position behind the transom: mechanism for moving the motor selectively between said operating position and a storage position ahead of the transom and within the boat, comprising support structure having means for the affixation thereof of the boat ahead of the transom; an arm element pivoted to the support structure on a transverse axis ahead of the transom to extend rearwardly in a rear position in which its terminal part is proximate to the operatively positioned motor, said terminal part having motor-engaging means for supporting the motor, and said arm element being swingable upwardly and forwardly about said axis to extend forwardly in a forward position and operative thereby to carry the motor to said storage position and for returning said motor to its operating position; and extensible and retractable brace means connected to the arm element in spaced relation to the pivot axis and connected to the support structure also in spaced relation to said pivot axis, said brace means extending and retracting as the arm element swings, and said brace means including releasable means for securing same against retraction and extension for locking said arm element against swinging.

6. The invention defined in claim 5, in which: the motor-engaging means includes a transverse pivot from which the motor depends and about which the motor is swingable fore-and-aft as it moves with the arm element; and the arm element has means thereon spaced from the motor-engaging means for receiving a lower portion of the motor upon swinging of the arm means to its forward position whereby to stably support the motor in its storage position.

7. For a boat having a transom and another boat portion angularly related to and adjacent the transom and an outboard motor having an operating position behind the transom: mechanism for moving the motor selectively between said operating position and a storage position ahead of the transom and within the boat, comprising support structure having angularly related elements mountable respectively on the transom and said other boat portion; shiftable means normally occupying a rear position and having a rear part proximate to the operatively positioned motor and a forward part adjacent to a portion of the support structure ahead of the transom; motor-engaging means on said rear part for supporting the

motor; and mounting means connecting said forward part of the shiftable means to said forward portion of the support structure for enabling forward shifting of the shiftable means and supported motor to a forward position for disposing the motor in said storage position and for returning the motor to its operating position.

8. The invention defined in claim 7 including: means adjustably interconnecting said support structure elements for relative angular adjustment to accommodate the angle between the transom and said other boat portion.

9. The invention defined in claim 8, in which: the mounting means includes an adjustable connection to the

support structure for enabling fore-and-aft adjustment of the mounting means so as to vary the distance between said mounting means and the transom.

10. The invention defined in claim 7, including: means on the shiftable means in addition to the motor-engaging means for receiving the motor in its storage position.

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