

Nov. 11, 1958

H. W. SHONTZ
OUTBOARD MOTOR LIFT

2,859,929

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2 Sheets-Sheet 1

FIG. 1

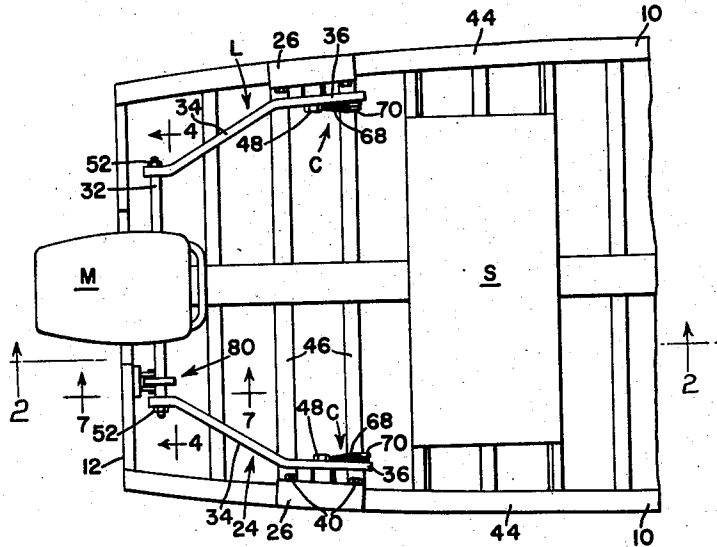


FIG. 2

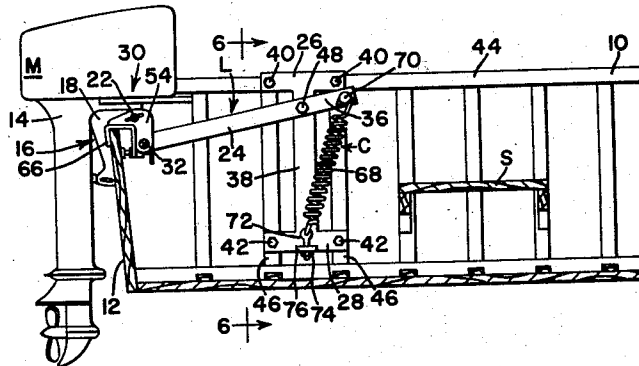
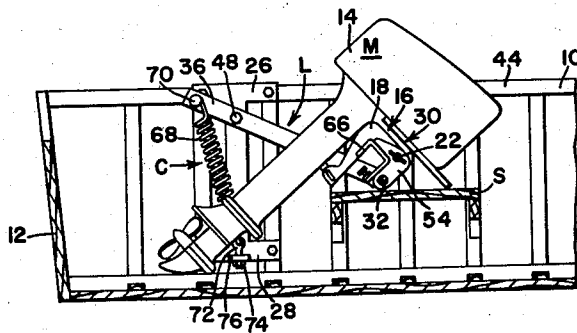


FIG. 3



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FIG. 4

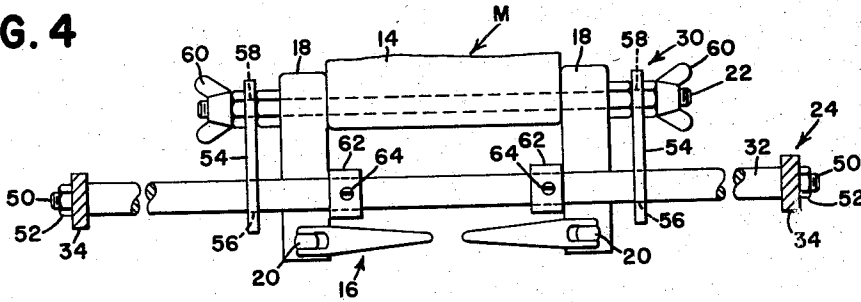


FIG. 5

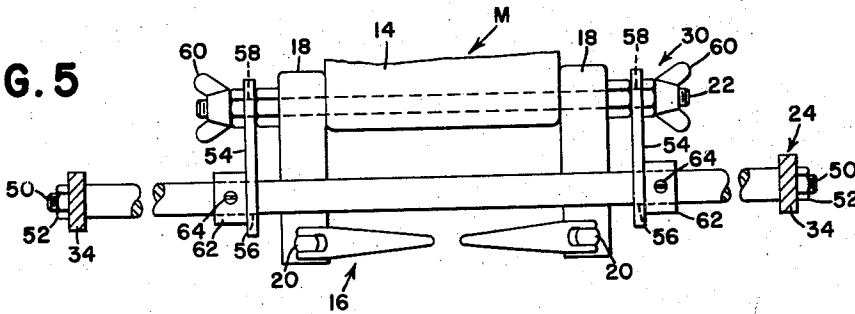


FIG. 6

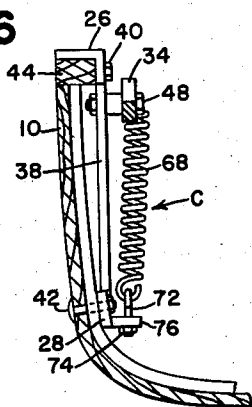


FIG. 7

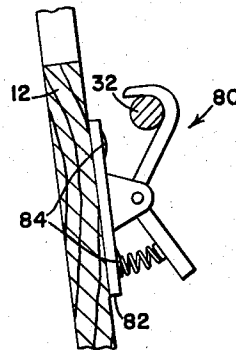
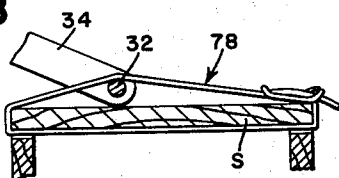


FIG. 8



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2,859,929

OUTBOARD MOTOR LIFT

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17 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.

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. In the latter respect, the lift mechanism includes efficient counterbalance and assist linkage so that a person sitting in the boat may easily effect the storage position of the motor, which is important in situations in which motor trouble occurs in deep water, for example. The lift mechanism also includes fore-and-aft members connectible between the motor and portions of the boat ahead of the motor and these members operate as braces to eliminate or at least reduce shock loading on the transom during operation of the boat, as when the motor swings up out of the water to clear an obstacle and then returns to normal after the obstacle is cleared. The mechanism also features simplicity and economy of design so as to accommodate itself to an almost endless variety of motors and boats without requiring any material structural alterations of either. To this end it is an object of the invention to provide the mechanism with novel supports in the form of brackets for carrying not only the movable parts of the lift but for anchoring the counterbalance and assist means, thus avoiding the imposition of additional or undesirable forces on the boat structure proper.

The foregoing and other important objects and features

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of the invention will become apparent as a preferred embodiment thereof is disclosed in detail in the ensuing specification and annexed sheets of drawings, the several figures of which will be described immediately below.

5 Figure 1 is a plan view of the rear portion of a boat embodying a motor and a lift mechanism therefor.

Figure 2 is a longitudinal section on the line 2—2 of Figure 1 and showing the motor in its normal operating position.

10 Figure 3 is a section similar to Figure 2 but illustrating the motor in its storage position.

Figure 4 is an enlarged view as seen along the line 4—4 of Figure 1 and showing one form of means for centering the motor and the handling device.

15 Figure 5 is a similar view showing a modified arrangement of the structure in Figure 4.

Figure 6 is an enlarged section on the line 6—6 of Figure 2.

20 Figure 7 is an enlarged section on the line 7—7 of Figure 1.

Figure 8 is an enlarged illustration of a typical safety lock for the storage position of the motor.

Those familiar with the art will recognize in the drawings the rear portion of a typical boat as having opposite fore-and-aft sides 10 and a transverse rear end portion or transom 12. An outboard motor, designated in its entirety by the letter M, conventionally has a main motor housing 14 and a mounting clamp 16 by means of which the motor is secured to the transom in a normal operating position as shown in Figures 1 and 2. The clamp combines bracket structure having inverted U-shaped members 18 and clamp screws 20 normally tightened to secure the operating position of the motor but which may be loosened to enable removal of the motor upwardly from the transom. The main motor housing is mounted on the bracket structure U-shaped members by a transverse pivot member 22 that provides a pivot axis about which the motor may be tilted upwardly and rearwardly to a limited degree as is conventional, such as for adjusting the angle of the propeller to the water, etc. Since the details of the motor as such are immaterial, they have not been described, or shown, suffice it only to say that the motor controls, whether remote or direct, are not adversely affected by the lift mechanism about to be described.

45 This lift, handling, or transport mechanism, referred to as a whole by the letter L, comprises essentially a main element here in the form of a bail 24, a pair of main supports 26, a pair of secondary supports or anchor members 28, motor-carrying means 30 for connecting the motor to the bail and force-exerting or counterbalance and assist means C. The bail is made up of a transverse right or shaft means 32 and a pair of fore-and-aft legs 34, each of which has a free end portion 36 proximate to the respective main support 26. Each main support 26 and its associate secondary support 28 are rigidly interconnected by an upright brace element 38 so that the two afford a simple unit for ready manufacture and installation, the supports 26 having means such as screws 40 and the supports 28 having similar means such as bolts 42 for affixation thereof to vertically spaced portions of the boat. The supports 26 are located in transverse alignment ahead of the normal operating position of the motor and the screws 40 enter the upper rail or gunwale portions of the boat at 44, while the supports 28 span a pair of ribs 46 through which the respective bolts pass to increase the strength of the mounting.

50 The supports 26 respectively have pivot members 48 thereon and these are alined or coaxial on a transverse pivot axis, mounting the respective free ends 36 of the bail legs for swinging of the bail between a rearwardly extending position (Figure 2) and a forwardly extending

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position (Figure 3), the swinging occurring in an arc of approximately 180° above the pivot members 48. The bight 32, when the bail is in its rear position, lies adjacent to and just forwardly or ahead of the motor M, and is preferably constructed as a shaft having reduced and threaded opposite ends 50 passing through appropriate apertures in the legs to receive nuts 52. Hence, the shaft may be easily removed and replaced with others of different lengths to accommodate different dimensional situations, as in the cases of wider or narrower boats, or in the case of mounting twin motors, etc. With respect to dimensions and directions, it should be noted that such expressions as "front," "rear," etc., are used here and in the claims as terms of convenience and not of limitation, since the normal characteristics of boat structure and motor mountings are based on those designations but are still susceptible to deviation.

The motor-carrying means, previously designated generally by the numeral 30, does not interfere in any way with the motor-mounting clamp means 16 but does preferably utilize the motor pivot pin or member 22, or a replacement thereof, as part of the connection of the motor to the bail. Other components of the means 30 are a pair of generally L-shaped ear members 54, each apertured at 56 to be received by the bight shaft 32 and each additionally apertured at 58 to receive opposite ends of the motor pivot pin 22, which ends are threaded to receive wing nuts 60. Since the ear members are axially slidable as well as relatively angularly movable on the bight shaft 32, they are capable of lateral adjustment in spacing to accommodate clamp brackets (such as 18) of different widths. The centered location of a single motor M such as shown here is maintained by securing means in the form of a pair of collars 62 slidable on the bight shaft 32 and selectively lockable as by set screws 64. In the present instance, the collars are shown respectively inwardly of the U-shaped clamp members 18 (Figure 4) but, as shown in Figure 5, they could be placed laterally outwardly of the ear members 54. The arrangement will just as easily handle twin motors, for example. In the disclosed motor M, the clamp means 16 has a cast flange 66 which the L-shaped members 54 are designed to fit, to prevent the motor as a whole from pivoting on the pin 22 relative to the bail 24, but the motor still retains its pivoting ability about the pin relative to the clamp 16 so that in its normal operating position it may tilt rearwardly and upwardly for adjustment of the propeller angle or to clear an obstacle in the water. However, since the ear members 54 are rotatable on the bight shaft 32, the motor, when its clamp 16 is released from the transom, may, when lifted clear of the transom, pivot fore-and-aft about the axis of the bight shaft, as will be brought out below. Nevertheless, the conventional motor is so well balanced about the pivot 22 and the offset between the pivots 22 and 32 is so slight that the user will experience no difficulty in effecting movement of the bail-carried motor between its operating position (Figures 1 and 2) and its storage position (Figure 3), particularly since the bail or lift element 24 partakes of the nature of a counterbalanced linkage because of the presence of the force-exerting or counterbalance and lift means C.

Each of these means, in the form shown here, comprises a relatively strong tension spring 68 connected at one end at 70 to the free end 36 of the respective bail leg 34 and anchored at its other end, by adjustable means including an eye-bolt 72 and nut 74, to an integral apertured ear 76 on the respective secondary support 28. The connection at 70 is spaced from the pivot member 48 so as to afford a lever arm and the anchor at 28 is directly below the pivot 48 so that as the bail swings between its rear and front positions the line of force exerted by the spring 68 passes over-center as respects the pivot 48. Hence, when the bail is in its rear position, for example, the line of force of the spring in tension is ahead of the

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pivot 48 and is acting downwardly to assist lifting of the bail and motor carried thereby. As the motor-loaded bail swings upwardly and forwardly, the assisting force decreases until the line of force passes behind dead center and then becomes a counter-acting or counterbalancing force cushioning or yieldably opposing forward and downward movement of the bail and motor to the storage position. The same forces in opposite phase are available in the return of the bail and motor to the operating position. It will be understood that the weight of the motor is ordinarily sufficient to retain the motor in its storage or forward position until a slight manual lifting force is applied to the motor or bail; although, a safety lock may be used such as a strap 78 around the seat S (Figure 8). When the motor is in its normal position and connected to the bail, it will be retained in place on the transom 12 by the clamp means 16, it being clear that the clamp is first released before the motor and bail are swung forwardly, in which case also a slight manual lifting force on the bail is all that is needed to initiate the change in position. Because of the approximate balance of the motor about the axis of the bail shaft 32, only a very light guiding effort is required to stabilize the motor during its change of position in either direction. The springs 68 can of course be adjusted at 72-74 to vary the assisting and counterbalancing forces.

There are occasions when it will be desirable or necessary to dismount the motor from the transom while the bail is in its rearward position. In order to prevent the bail from suddenly swinging upwardly under the force of the springs 68 when the motor-to-bail disconnection is effected at 22-54-60, a spring-loaded latch 80 is utilized as means for releasably retaining the rearward position of the bail. This latch may be of any suitable type, having an apertured plate 82 by means of which it may be readily mounted on the transom, for example, as by screws 84. Since the ease of operation of the lift is so outstanding, the latch is readily released for lifting operation of the motor and bail. The same is true of the forward safety latch 78.

The use and operation of the device are thought to be clear from the foregoing; although, it may be well to refer briefly to the major characteristics thereof. Any conventional outboard-motor-equipped boat may be modified by the lift mechanism when furnished as an attachment; or, the mechanism may be supplied as original equipment installed on the boat. The mounting of any typical motor, as the motor M here, on the transom is accomplished in usual fashion as by the clamp 16. The boat-mounted bail is swung rearwardly and depressed until the mounting ears 54 line up with the motor pivot 22, from which the original external nuts are removed so that the ends thereof receive the ears 54 via their apertures 58; alternatively, the motor pivot pin may be replaced with a longer pin if necessary, or if sufficient threaded portions of the original pin ends remain to accommodate the ears 54 and wing nuts 60 the same objective will be attained. The rear latch 80 will have automatically locked the bail and therefore the motor-to-bight connection is readily accomplished. Any upward strain on the clamp by the bail under action of the counterbalance springs 68 is negligible and in any event when the latch 80 is used the strain is nil. It will be understood that two latches may be used to equalize the locked bail if desired. The collars 62 are adjusted and locked to center the motor relative to the bight 32. As will be readily apparent from the comparison of Figs. 2 and 3, the location of the pivot axis 48-48, the length of the linkage L and the motor-supporting pivot connection 30 combine to enable the motor to be moved between its operating and storage positions without substantial inversion and hence undesirable tipping, spillage of fuel and lubricant, etc. are avoided.

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With the foregoing procedure achieved, the boat may be operated as usual. The spread-out design of the bail avoids interference with the comfort of the occupants of the boat. In the event of difficulty with the motor when in a situation in which it is inconvenient for the operator to get out of the boat, he can remain in the boat, release the latch 80 and clamp 16 and readily bring the motor inboard for inspection, etc., and may just as readily return it to operating position after the trouble has been cleared. The user will find the lift most convenient in boating through shallows, marshes, etc., where ordinarily the motor would interfere with progress. Other advantages of the inboard-stored motor are obvious but many of these benefits had to be sacrificed because of the difficulty and nuisance formerly involved in manually removing and replacing the motor. Of prime importance is the advantage obtained from the easy storage of the motor during trailer transport of the boat, since the motor rides inboard on the floor and/or seat of the boat, safe from damage and imposing no undue loads on the transom. Even in normal operation of the boat, the lift mechanism legs 34 act as fore-and-aft braces in tension and compression between the motor and the sides of the boat ahead of the motor to relieve strains on the transom. The vertical bracing effect of the depending elements 38 counteracts any strain imposed by the springs 68 and such strains are not transferred directly to the sides of the boat.

Various other features and significant attributes of the invention will readily occur to those versed in the art, as will obvious modifications of the preferred structure disclosed, all of which are clearly within the spirit and scope of the invention.

What is claimed is:

1. In a boat having at its rear end an outboard motor releasably mounted for upward removal from a normal operating position, the combination therewith of motor lift mechanism for moving the motor between said normal position and a forwardly disposed storage position within the boat, comprising support structure having means for the affixation thereof to the boat intermediate the front and rear ends thereof; a lift bail having a transverse bight and a pair of fore-and-aft legs extending from the bight to free end portions respectively proximate to the support structure, said legs being of such length as to dispose the bight adjacent to the normally positioned motor; pivot means on a transverse axis mounting the lift bail on the support structure for fore-and-aft swinging in an arc above said axis between a rearwardly extending position and a forwardly extending position; and motor-carrying means on the bight releasably connectible to the motor for sustaining the motor on and depending from the bight when the motor is released from the rear end of the boat to swing the motor with the bail between said normal and storage positions, said motor-carrying means including a transverse pivot about which the dependant motor may swing fore and aft when said motor is released from the rear end of the boat, and the length and pivotal mounting of said legs and said last-named pivot enabling the released and dependent motor to clear the rear end of the boat and to swing between said normal and storage positions without inversion of said motor.

2. The invention defined in claim 1, including: anchor means connected to the boat; biasing means connected between the anchor means and a portion of the bail spaced from the pivot axis to exert a lifting force on the bail when the bail extends rearwardly, said biasing means being so arranged as to pass over-center as respects said axis when the bail is swung toward its forwardly extending position as to exert a lifting force on the bail in its forwardly extending position.

3. The invention defined in claim 2, including: releasably locking means cooperative between the bail and a portion of the boat to retain the bail in at least its

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rearwardly extending position for preventing upward swinging of the bail when the motor and bail are disconnected from each other.

4. The invention defined in claim 2, including: laterally spaced supports in the support structure a pair of connecting portions rigidly attached to and depending from the respective supports to afford said anchor and disposed below the transverse pivot axis; and the biasing means comprises a pair of springs, one connected to each anchor and the respective leg of the lift bail.

5. The invention defined in claim 4, in which: each depending portion has means for the affixation thereof to a portion of the boat in downwardly spaced relation to the respective support so as to confine the force of the respective spring to the respective depending portion.

6. The invention defined in claim 1, in which the transverse pivot included in the motor-carrying means is coincident with the axis of the bight.

7. In a boat having at its rear end an outboard motor releasably mounted for upward removal from a normal operating position, the combination therewith of a support having means thereon for the affixation thereof to the boat ahead of the normally positioned motor; a transport element carried by the support for movement between a rearwardly extending position rearwardly proximate to the rear of the boat to a forward position ahead of the rear of the boat and laterally intermediate the sides of the boat; motor-carrying means on the element and detachably connected to the motor for sustaining the motor for travel with said element between said positions of said element to thereby incur said normal position of the motor as well as a motor storage position within the boat; and force-exerting means connected between the boat and element for moving the element, and including a biasing element operative in one phase to urge the transport element and motor toward the storage position and operative in another phase to cushion movement of the transport element and motor into said storage position.

8. The invention defined in claim 6, in which: the motor-carrying means includes abutment means preventing swinging of the motor relative to the motor carrying means and therefore confines swinging of the motor to swinging about the axis of the bight.

9. For a boat as defined in claim 1 in which the motor mounting on the boat includes a clamp secured to the boat and a motor housing connected to the clamp by a transverse pivot member, the further improvement comprising attaching elements included in the motor-carrying means on the bight for connection to said motor pivot member.

10. The invention defined in claim 1 including: means mounting the motor-carrying means on the bight for lateral adjustment relative to the motor and bight.

11. The invention defined in claim 10, in which: the bight comprises a shaft means and the lateral adjustment means comprises a pair of collars securable to the shaft means in selected lateral positions.

12. In a boat having at its rear end an outboard motor releasably mounted for upward removal from a normal operating position, the combination therewith of a support having means thereon for the affixation thereof to the boat ahead of the normally positioned motor; a transport element carried by the support for movement between a rearwardly extending position rearwardly proximate to the rear of the boat to a forward position ahead of the rear of the boat and laterally intermediate the sides of the boat; motor-carrying means on the transport element and detachably connected to the motor for sustaining the motor for travel with said element between said positions of said element to thereby incur the normal position of the motor as well as a motor storage position within the boat, said carrying means including a transverse pivot enabling swinging of the released motor relative to said element to facilitate move-

ment of the motor between said normal and storage positions; and said transport element being so constructed and arranged that the motor in its storage position lies wholly ahead of the rear of the boat; and force-exerting means connected between the boat and the element for moving the element.

13. In a boat having at its rear end an outboard motor releasably mounted for upward removal from a normal operating position, the combination therewith of a support having means thereon for the affixation thereof to the boat ahead of the normally positioned motor; a transport element carried by the support for swinging movement about a pivot axis between a rearwardly extending position proximate to the rear of the boat to a forward position approximately intermediate the front and rear ends of the boat and laterally intermediate the sides of the boat; motor-carrying means on the transport element and detachably connected to the motor for sustaining the motor for travel with said element between said positions of said element to thereby incur the normal position of the motor as well as a motor storage position within the boat; and counterbalance and assist means operative to assist movement of the element and motor in departure thereof from the normal and storage positions and to counterbalance the weight of the element and motor in entering said normal and storage positions.

14. The invention defined in claim 13, in which: the pivot axis is transverse and swinging of the element is in arc above said axis; and the counterbalance and assist means passes over-center as respects said axis upon movement of the element between its positions whereby to act ahead of said axis in one position of the element and behind said axis in the other position of the element.

15. The invention defined in claim 13, including: releasable lock means for locking the element against the influence of the counterbalance and assist means when the motor is disconnected from said element.

16. In a boat having at its rear end an outboard motor releasably mounted for upward removal from a normal operating position, the combination therewith of support means affixed to the boat ahead of the normally posi-

tioned motor; and counterbalanced linkage means mounted on the support means and supporting the motor in pendant fashion for moving the normally positioned motor upwardly and clear of the rear end of the boat to a storage position and for selectively returning the motor to its normal operating position, said linkage means including a motor-supporting connection enabling relative movement between said linkage means and said motor so that the motor clears the rear end of the boat without inversion as it moves between its normal and storage positions.

17. In a boat having at its rear end an outboard motor releasably mounted for upward removal from a normal operating position, the combination therewith of a support having means thereon for the affixation thereof to the boat ahead of the normally positioned motor; a transport element carried by the support for movement between a rear position proximate to the rear of the boat and a forward position ahead of the rear of the boat and laterally intermediate the sides of the boat; motor-carrying means connecting the transport element to the motor for sustaining the motor for travel with said element between said front and rear positions of said element to thereby incur a motor-storage position within the boat as well as the aforesaid normal position of the motor; and counterbalance and assist means operative to assist movement of the element and motor in departure thereof from the normal and storage positions and to counterbalance the weight of said element and motor in entering said normal and storage positions.

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