

March 2, 1926.

1,574,977

L. J. JOHNSON ET AL

OUTBOARD MOTOR MOUNTING

Filed June 16, 1924

4 Sheets-Sheet 1

Fig. 1.

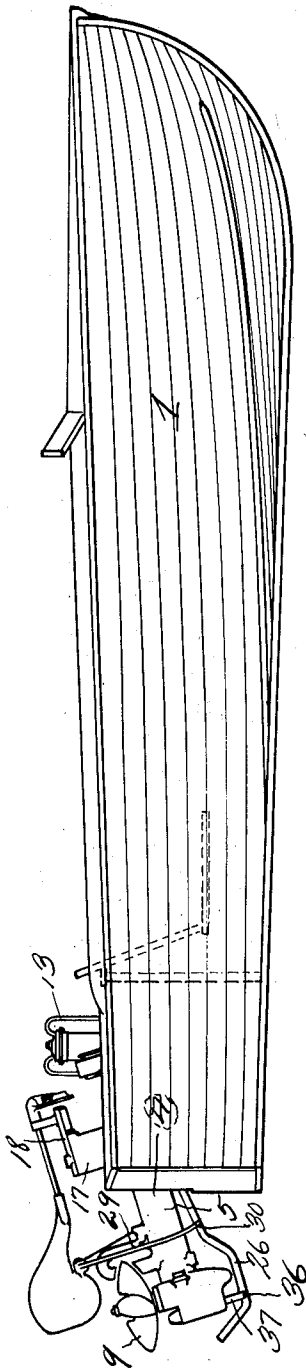
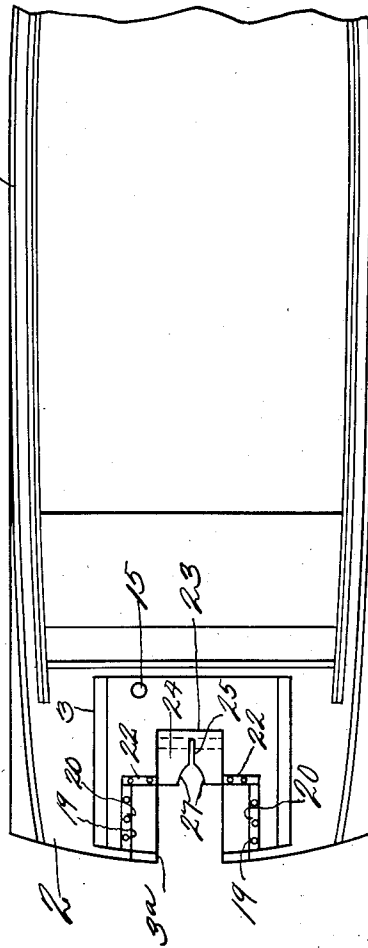


Fig. 2.



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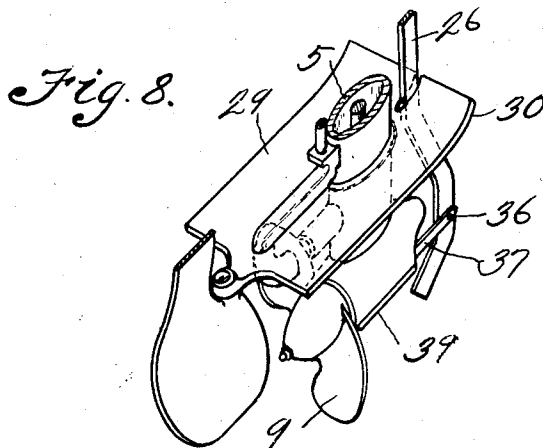
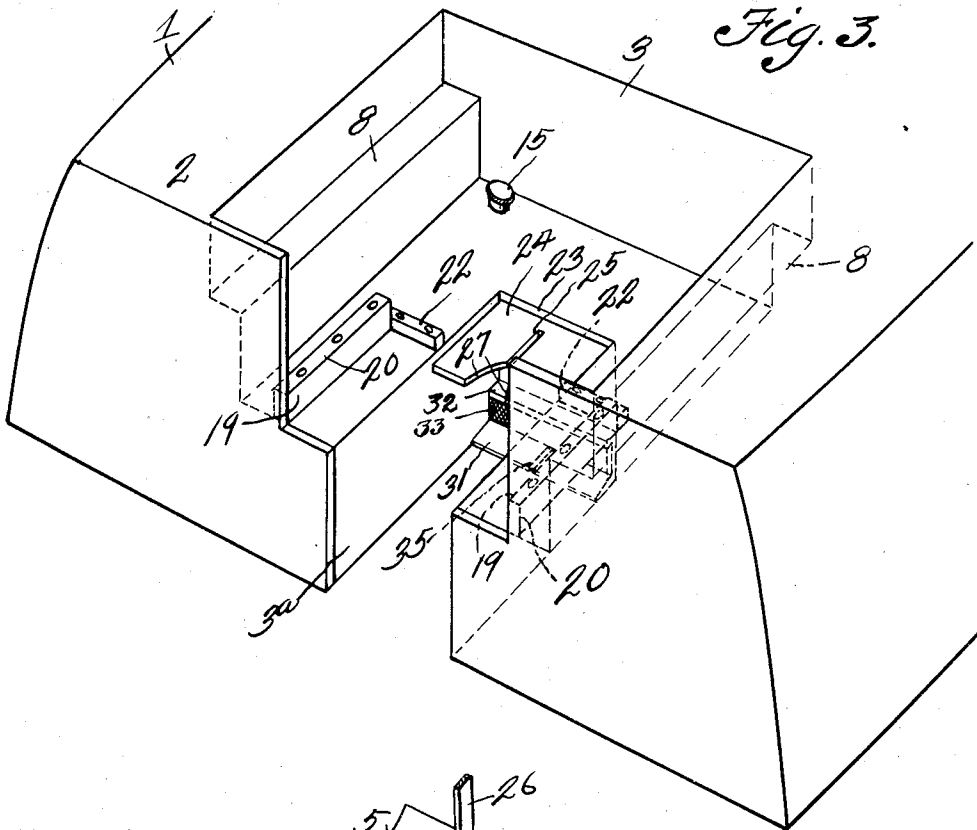
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4 Sheets-Sheet 2



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4 Sheets-Sheet 3

Fig. 4.

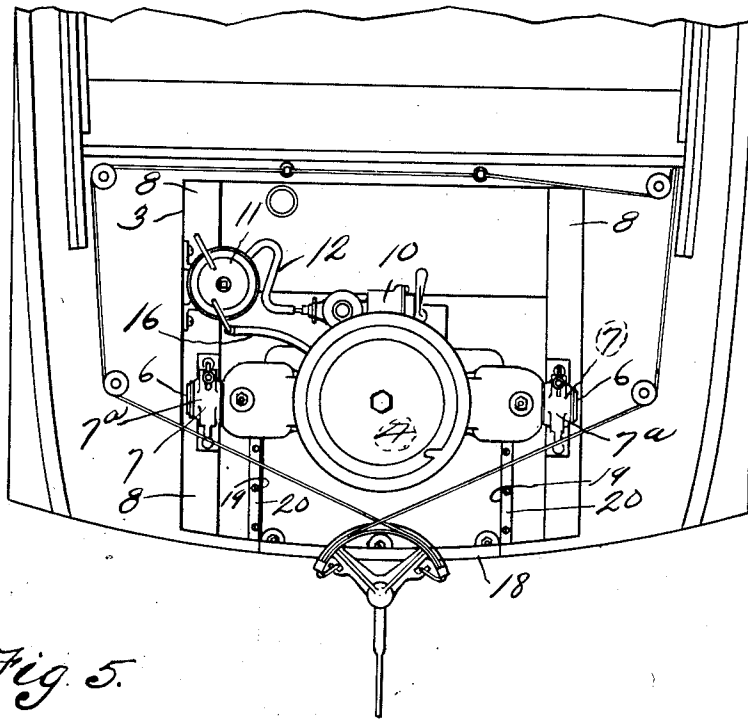
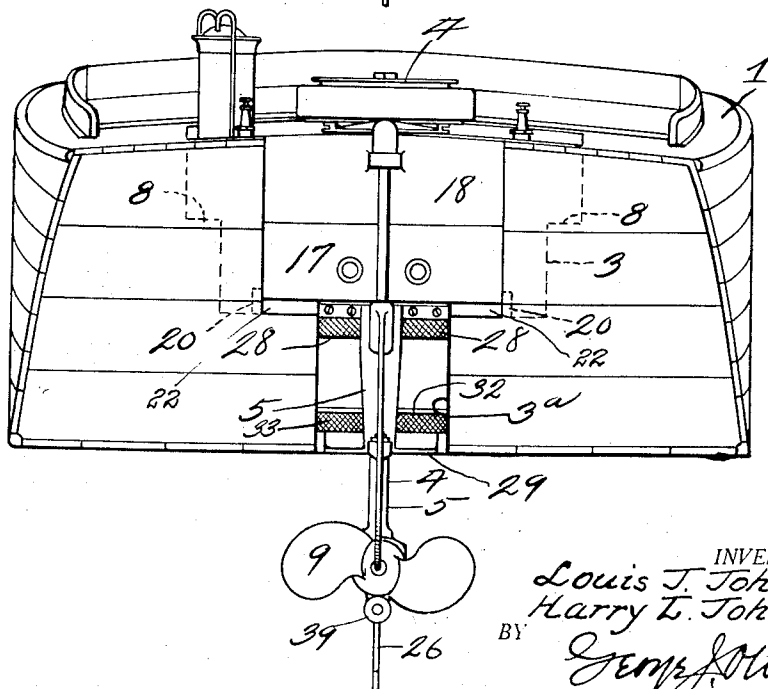


Fig. 5.



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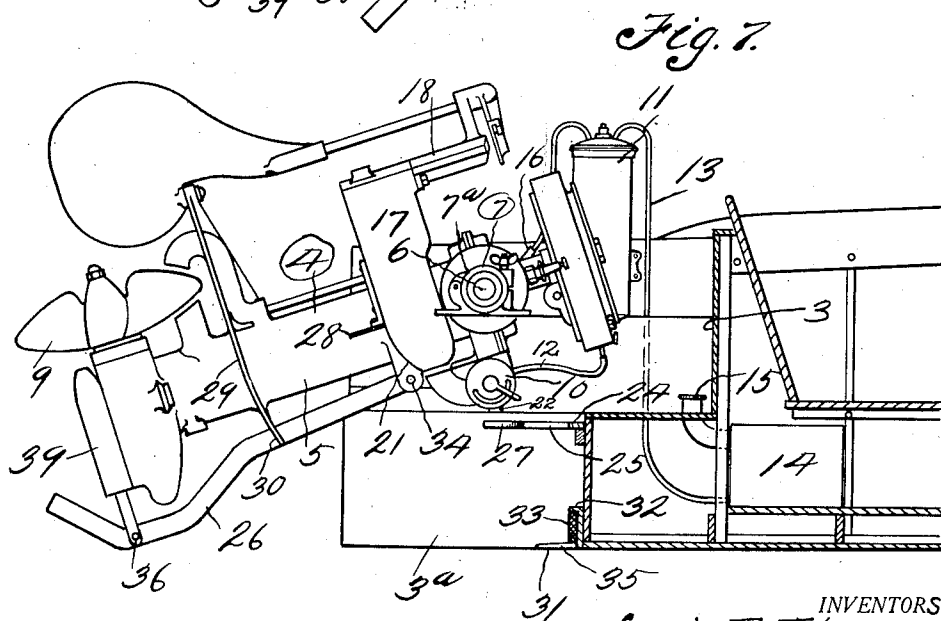
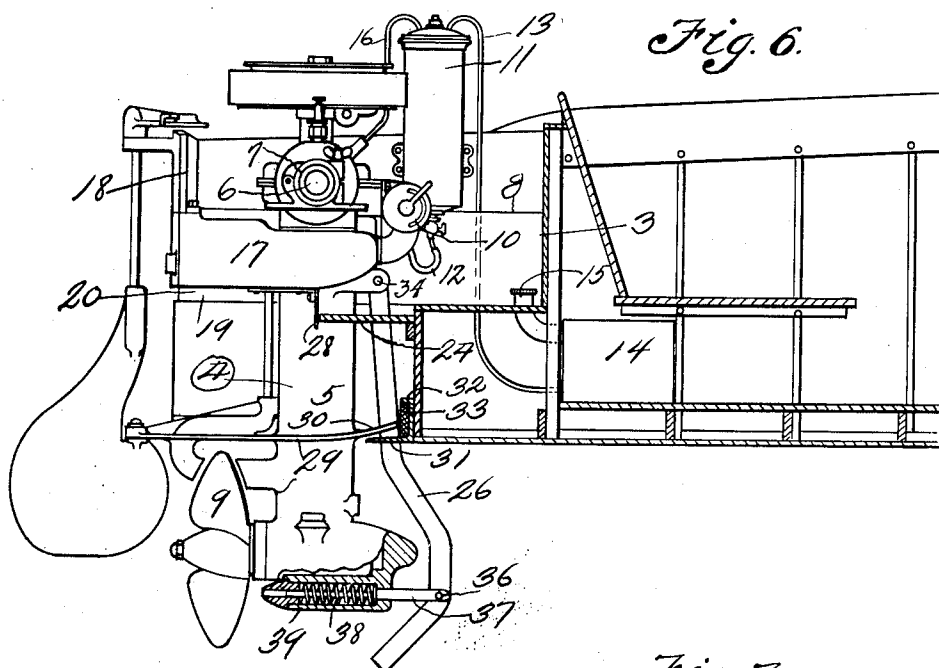
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OUTBOARD MOTOR MOUNTING

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4 Sheets-Sheet 4



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## UNITED STATES PATENT OFFICE.

LOUIS J. JOHNSON, OF MISHAWAKA, AND HARRY L. JOHNSON, OF INDIANAPOLIS, INDIANA, ASSIGNORS TO JOHNSON BROS. ENGINEERING CORPORATION, OF SOUTH BEND, INDIANA.

## OUTBOARD-MOTOR MOUNTING.

Application filed June 16, 1924. Serial No. 720,317.

*To all whom it may concern:*

Be it known that we, LOUIS J. JOHNSON, a citizen of the United States, residing at Mishawaka, in the county of St. Joseph and State of Indiana, and HARRY L. JOHNSON, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Outboard-Motor Mountings, of which the following is a specification.

The invention relates to outboard motor mountings, and has for its object to provide a motor pivotally mounted in a recess in the stern of a boat in a manner whereby it may tilt to a position beyond the end of the boat, for instance when striking an object in the water. The motor is disposed substantially within the lines of the stern of the boat, thereby obtaining all the advantages of a motor disposed within the boat proper, but at the same time eliminating the collection of grease within the boat, and allowing the motor to be easily removed from the boat without the removal of a propeller shaft which extends through a stern packing gland.

A further object is to provide means whereby when the motor is in normal operative position, the recess in the stern of the boat will be substantially closed, thereby obviating the danger of water reaching the carbureter and other parts of the upper structure of the engine, which is particularly desirable where the boat and engine are used in rough water where the boat is subjected to side swipe and choppy seas, especially when the boat is tied to a dock or when the boat is a high speed one, at which time boats of high speed character have a tendency to raise their bows clear of the water, consequently materially raising the water line at the stern of the boat.

A further object is to mount the motor in the recess in the stern with its pivotal point below the deck line of the boat, thereby keeping the center of gravity low, consequently obviating excessive top hamper and eliminating the roll. It also allows the use of a relatively short propeller shaft, thereby allowing sturdy construction of motor as a whole with less vibration at high speeds.

A further object is to provide the pivoted motor with means cooperating with the re-

cess and parts therein, whereby when the motor is moved to vertical operative positions, the bottom and rear ends of the recess will be substantially closed, thereby protecting the motor from the water, obviating damage to the motor, and protecting the motor against side swipe incident to beam, quarter or stern seas.

A further object is to provide the pivoted motor with a muffler, which muffler is transversely disposed and forms one of the means for closing the recess when the motor is in operative position. Also to provide the motor with a plate, which plate, when the motor is in vertical operative position, is flush with the bottom of the boat, thereby forming not only a continuation of the bottom for the recess in the stern of the boat, but also acts as an anti-cavitation plate above the propeller.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawing, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawing:—

Figure 1 is a side elevation of a boat showing the outboard motor applied thereto and in tilted position, for instance when tilted for repair purpose or when engaging an obstruction.

Figure 2 is a top plan view of the stern end of the boat, showing the recess therein and the motor removed.

Figure 3 is an enlarged perspective view of the stern of the boat.

Figure 4 is a top plan view of the stern of the boat, showing the motor therein, and the recess closed.

Figure 5 is a view in elevation of the stern of the boat.

Figure 6 is a vertical longitudinal sectional view through the stern of the boat, showing the motor in a recess thereof, and in operative position.

Figure 7 is a view similar to Figure 6, but showing the motor in tilted position.

Figure 8 is a perspective view of the lower end of the motor, showing the closure plate for the bottom of the recess.

Referring to the drawings, the numeral 1 designates a conventional form of boat, preferably of the speed type, and 2 the stern thereof. Heretofore pivoted outboard motors have been supported by various kinds of brackets carried by the stern of the boat with the motor rearwardly of the stern and outside the lines of the boat, however it has been found, under these conditions, it is necessary to design the motor whereby the carbureter and ignition system is disposed well above the deck of a boat or gunwale to protect the same from the water incident to waves and choppy seas, however the motors are never free from side swipes of seas or damage incident to tying up to docks or backing into docks.

To obviate the above difficulties and to allow a relatively low slung motor to be used, the stern 2 of the boat is provided with a recess 3, preferably disposed on the longitudinal center of the boat, and which recess 3 is provided with a reduced portion 3<sup>a</sup>. The outboard motor 4 is of a conventional form, however it will be noted that the same is of a relatively heavy construction, and the drive shaft casing 5 relatively heavy, consequently vibrations incident to the operation of the motor are reduced to a minimum, as it is obvious with the heavy construction a relatively short drive shaft may be used, which, in combination with the other working parts of the motor are mounted in a relatively heavy rigid structure. Motor 4 adjacent its upper end is provided with oppositely extending horizontally disposed pintles 6, which pintles are rotatably mounted in bearing blocks 7 mounted on the ledges 8 of the recess 3, and which bearing blocks are preferably of the separable type, whereby hinged sections 7<sup>a</sup> thereof may be opened for allowing the motor as a whole to be removed from the boat. The motor drives a propeller 9 at the lower end thereof in the usual manner, and through conventional mechanism, however the motor is provided adjacent its upper end with a carbureter 10, which carbureter is connected to a vacuum tank 11 secured to the side wall of the recess 3 by means of a flexible pipe 12, therefore the device may freely move pivotally in a vertical longitudinal plane. Gasoline is supplied to the vacuum tank 11 through the pipe 13, which pipe extends downwardly and is connected to the gasoline tank 14, which gasoline tank is disposed within the hull of the boat proper, however the gasoline tank is preferably provided with a filling spout 15 which extends rearwardly and upwardly into the recess 3 of the stern of the boat where it can be easily filled without danger of spilling of gasoline within the boat. The vacuum tank 11 is provided with a second flexible connection 16 with the motor for completing the fuel supply system,

which may be of any construction desired, however flexible connections are provided for allowing freedom of movement of the motor, and the location of the fuel tank within the boat where the weight of the tank and fuel may be disposed adjacent the bottom of the boat. Extending rearwardly from the casing 5 of the motor, and transversely disposed, is a relatively wide muffler 17, which muffler, in combination with the transversely disposed wall 18 carried by the upper rear side thereof, forms a closure for the rear end of the recess 3 in the stern of the boat, as clearly shown in Figures 4 and 5. When the motor is moved to a housed position within the recess 3, the muffler engages the inner sides 19 of the strips 20 at opposite sides of the recess 3, and has a close sliding engagement therewith, consequently a relatively watertight connection is formed, and at which time when the motor is in operative position, the forward curved ends 21 of the muffler engage over the transversely disposed slats 22 in the bottom of the recess 3, thereby forming a relatively watertight joint for preventing excessive flow of water into the recess 3. Extending rearwardly from the forward end 23 of the portion 3<sup>a</sup> of the recess is a bifurcated plate 24, which plate receives in the slot 25 thereof the yieldably mounted shock receiving arm 26 and in the curved portions 27, the opposite sides of the propeller drive shaft casing 5, therefore it will be seen that water will be substantially prevented from entering the recess 3 when the outboard motor is in operative position as shown at Figure 6, when the transverse packing member 28, which is secured to the under side of the muffler at opposite sides of the casing 5, engages the rear edges of the plate 24. The yieldable member 28 may be formed from any kind of material, for instance as sheet rubber, or rubberized fabric, therefore it will be seen that a relatively watertight connection is formed, and the recess 3 substantially closed by the bifurcated plate 24, member 28, muffler 17 and the member 18 carried by the muffler.

To obviate suction incident to the lower end of the portion 3<sup>a</sup> of the recess being open, and to prevent cavitation above the propeller 9, the drive shaft casing 5 has mounted thereon a plate 29, which plate has its forward end 30 slightly curved upwardly, and the plate as a whole is substantially the same width as the lower narrow portion 3<sup>a</sup> of the recess 3, consequently will engage the opposite walls of the portion 3<sup>a</sup> of the recess, and prevent water from being forced upwardly into the recess by the propeller 9 or being sucked therefrom by the propeller, therefore cavitation will be prevented. When the motor is moved to operative position as shown in Figure 6, the curved end 30 of the plate 29 moves over the

transversely disposed ledge 31, and the bottom face of the plate 29 assumes a position in the plane of the bottom of the boat, consequently the plate will not retard the speed

5 of the boat. The ledge 31 is carried by a transversely disposed channel bar 32, and in which channel bar a strip of rubber 33 is seated, and against which the curved end 30 of the plate 29 engages when the motor  
10 moves to operative position after a tilting operation, for instance after engaging an obstruction, for instance a log or sand bar, consequently the shock is absorbed and the strain relieved on the motor as a whole. The  
15 shock receiving arm 26 is pivotally connected at 34 to the engine casing and extends downwardly at the forward side of the motor in a plane where it will be received in the slot 25, and the slot 35 in the flange 31 of the chan-  
20 nel member 32. The lower end of the bar 26 curves forwardly, downwardly and rearwardly and has pivotally connected thereto at 36 a rearwardly extending piston rod 37, which piston rod engages a spring 38 carried in the casing 39 on the lower end of the  
25 drive shaft casing 5, and it will be seen that when the arm 26 engages a log or other submerged objects, especially when the boat is going at a high speed, the initial shock on  
30 the motor will be taken up by the spring 38, consequently the shock of the impact is reduced to a minimum and relieved from the motor proper. However it will be seen that  
35 the arm 26 will also absorb some of the shock incident to the motor being moved from tilted inoperative position to vertical operative position.

From the above it will be seen that an out-  
40 board motor is provided which is pivotally mounted within a recess in the stern of a boat and provided with means whereby when the motor is moved to operative position the recess will be substantially closed, thereby obviating damage to the motor and  
45 protecting the same from waves or from objects, and at the same time positioning the motor where all the advantages of an inboard motor are obtained, without the disadvantages of the throwing of oil, grease  
50 and the like within the boat. Also the motor may be easily removed for repair purposes without the necessity of disconnecting drive shafts and securing bolts within the hull proper of the boat. The motor is entirely  
55 disposed within the lines of the boat, and by being supported and substantially disposed below the deck of the boat, it is obvious that the roll of the boat will be reduced to a minimum incident to the weight of the engine, thereby obtaining in an outboard mo-  
60 tor a desirable feature of the inboard motor.

The invention having been set forth what is claimed as new and useful is:—

65 1. The combination with the stern of a boat having a recess therein extending en-

tirely through the stern of the boat, of a drive motor mounted in said recess and maintained in relative relation to the boat upon variation of the draft of the boat.

2. The combination with the stern of a 70 boat having a recess therein, of a drive motor pivotally mounted in said recess and disposed within the lines of the boat.

3. The combination with the stern of a boat having a recess therein, of a pivotally 75 mounted drive motor disposed in said recess.

4. The combination with the stern of a boat having a recess therein, of a pivotally mounted drive motor disposed in said recess and movable in a vertical longitudinal plane 80

5. The combination with the stern of a boat having a recess therein, of a pivotally mounted motor disposed in said recess, said motor being disposed substantially within the lines of the stern of the boat. 85

6. The combination with the stern of a boat having a recess therein, of a pivotally mounted motor disposed in said recess, said motor being pivoted within the recess and movable in a vertical longitudinal plane. 90

7. The combination with the stern of a boat having a recess therein, a pivotally mounted motor disposed in said recess, of means whereby when said motor is in opera- 95 tive position said recess will be substantially closed.

8. The combination with the stern of a boat having a recess therein, a pivotally mounted motor disposed in said recess, of cooperating means carried by the motor and 100 the recess whereby when the motor is in operative position the recess will be substantially closed.

9. The combination with the stern of a boat having a recess therein, a pivotally 105 mounted motor disposed in said recess and within the lines of the boat, of means whereby when said motor is in operative position said recess will be substantially closed.

10. The combination with the stern of a 110 boat having a recess therein, a pivotally mounted motor disposed within said recess, said motor being disposed substantially within the lines of the stern of the boat, of cooperating means carried by the motor 115 and the recess whereby when the motor is in operative position the recess will be substantially closed.

11. The combination with the stern of a boat having a recess therein, a motor piv- 120 otally mounted in said recess, of means for closing said recess when the motor is in operative position, said means comprising cooperating members carried by the motor and the recess, a plate carried by the motor 125 and movable therewith, said plate being positioned whereby when the motor is in operative position it will substantially be in the same plane as the bottom of the boat.

12. The combination with the stern of a 130

- boat having a recess therein, a pivoted motor mounted in said recess, a muffler carried by said motor, a plate carried by said motor adjacent its lower end, a rearwardly extending plate carried by the stern of the boat in the recess, said muffler and plate forming means whereby when the motor is in operative position the recess will be substantially closed.
- 10 13. The combination with the stern of a boat having a recess therein, a pivoted motor mounted in said recess, a muffler carried by said motor, a plate carried by said muffler, said muffler engaging opposite walls of the  
15 recess when in closed position, a plate carried by the stern of the boat in the recess, a member carried by the muffler and cooperating with the plate, said muffler, plates carried thereby and a plate in the recess co-  
20 operating to close the recess when the motor is in operative position.
14. The combination with a motor pivotally mounted in a recess in the stern of a boat, a drive propeller carried by the lower  
25 end of said motor, of a plate carried by the motor above the propeller and positioned whereby it will form a closure for the recess when the motor is in operative position.
15. The combination with a motor pivotally mounted in a recess in the stern of a boat, a drive propeller carried by the lower  
30 end of said motor, of a plate carried by the motor above the propeller and forming a closure for the lower end of the recess.
- 35 16. The combination with a motor pivotally mounted in a recess in the stern of a boat, a propeller carried by said motor, of a plate carried by said motor adjacent the propeller and positioned whereby when the  
40 motor is in operative position it will form a closure for the recess and be disposed substantially in the plane of the bottom of the boat.
17. The combination with an outboard  
45 motor pivotally mounted in a recess in the stern of a boat, plates carried by said motor and recess and cooperating for forming closures for the recess, one of said plates being positioned to assume a position in substantially the same plane as the bottom of  
50 the boat and form an anti-cavitation plate.
18. The combination with an outboard motor pivotally mounted in a recess in the stern of a boat, a propeller carried by said motor and disposed below the stern of the  
55 boat, of a plate carried by said motor above the propeller and positioned whereby it will register with the bottom of the boat and be received within the recess in the stern of the boat.
19. The combination with the stern of a boat having a recess therein, the upper portion of which is wider than the lower portion, of a motor pivotally mounted in the  
60 upper wide portion of the recess and extending downwardly through the other portion of the recess, of means carried by the motor and cooperating with the wide portion of the recess for closing the same, and means carried  
65 by the motor and cooperating with members within the narrow portion of the recess for closing the same, and substantially preventing the entrance of water into the enlarged portion of the recess.
20. The combination with the stern of a  
75 boat having a recess therein, the upper portion of which recess is wider than the lower portion, a motor pivotally mounted within the wide portion of the recess and extending through the narrow portion thereof, and  
80 means carried within the recess and by the motor whereby when the motor is in operative position water will be substantially excluded from the enlarged portion of the recess.
- In testimony whereof we affix our signatures.
- LOUIS J. JOHNSON.  
HARRY L. JOHNSON.