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SUPPORTING ASSEMBLY FOR OUTBOARD MOTORS

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2 Sheets-Sheet 1

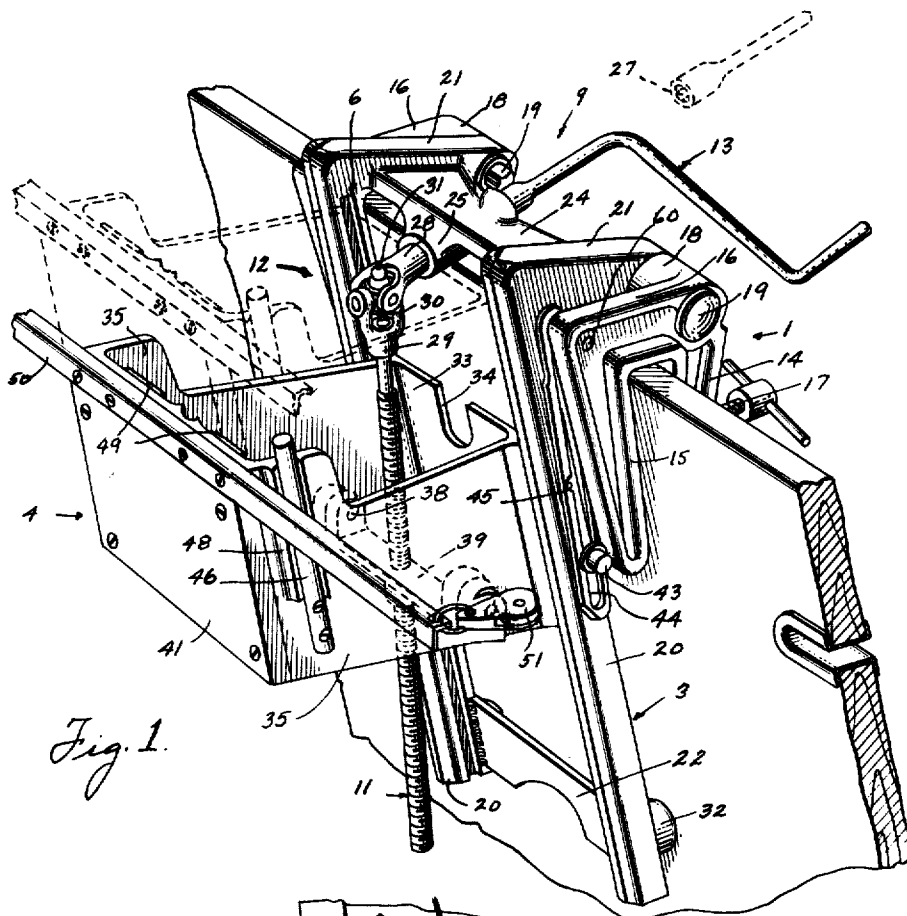


Fig. 1.

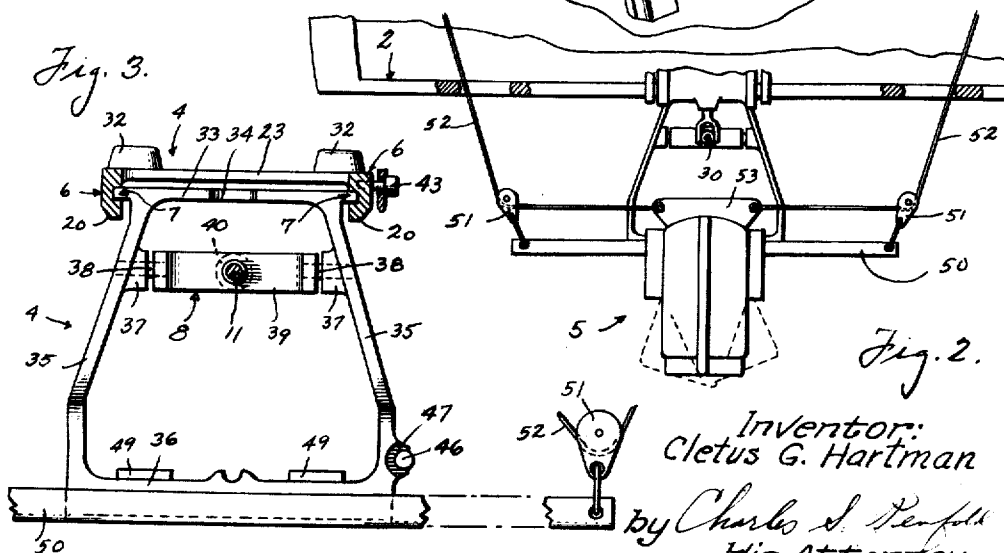


Fig. 2.

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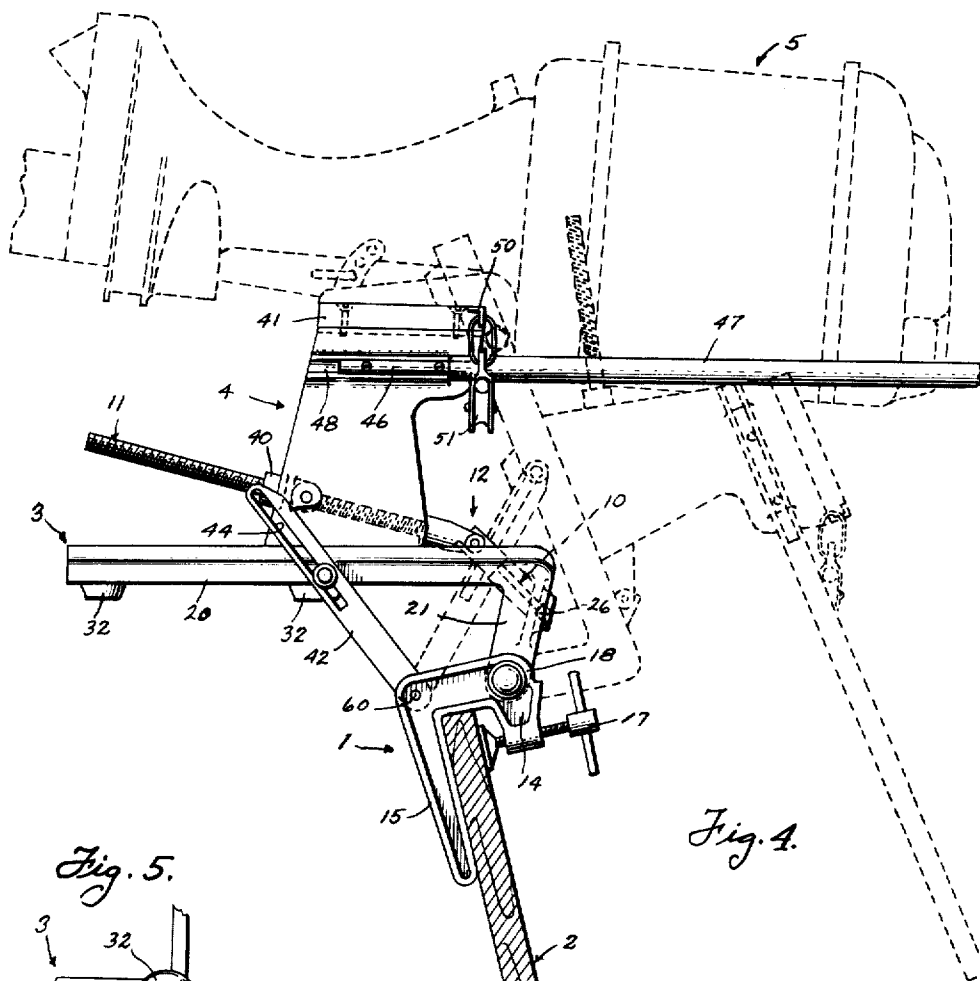


Fig. 4.

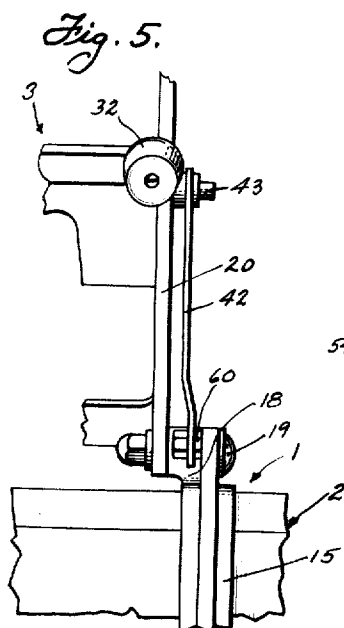


Fig. 5.

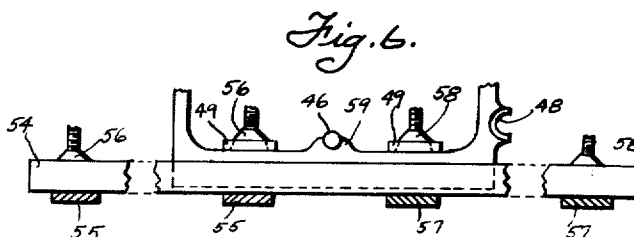


Fig. 6.

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SUPPORTING ASSEMBLY FOR OUTBOARD MOTORS

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4 Claims. (Cl. 248—4)

The invention relates generally to supports and more particularly is directed to a structure, device or assembly for supporting an outboard motor.

The structure embodying the invention may be used wherever applicable and for supporting any of the various kinds or types of outboard motors now in current use, but has been primarily designed and constructed to support motors of the heavier class such as those having a horsepower rating of ten or more. Some motors in this class are used to propel relatively large boats known as cabin cruisers. Such motors are relatively heavy and as a result it is difficult, if not impossible, under certain conditions, to lift or swing the motor upwardly and inwardly to a convenient position when repairs or adjustments are required.

It is recognized that various attempts have been made to provide a mounting assembly for motors of the above mentioned heavier class but none have proven completely satisfactory under all operating conditions or use. Some assemblies are relatively cumbersome, some are comprised of a multitude of intricate parts, while others are of flimsy construction and difficult to operate.

With the foregoing in mind, one of the principal objects of the invention is to provide a motor supporting assembly which is durable, comprised of a minimum of components, and mechanism whereby a carriage for the motor and constituting one of the components can be readily raised or lowered with a motor thereon to an appropriate operative or inoperative position. This adjustment of the carriage affords a means whereby the motor can be raised and then swung into a convenient position with respect to the boat for the purpose above stated. This setup also provides means for elevating the motor so that the propeller will not strike a sand bar or other obstruction and enables one to operate the motor in relatively shallow water when approaching a shore.

More particularly, an important object of the invention is to provide a structure including, among other things, a mounting comprising a pair of clamps for attachment to the transom of a boat, a support pivotally connected to the mounting, a carriage for the motor slidably mounted on the support, a fitting on the carriage, and driving means on the support operatively connected to the fitting in a manner whereby the carriage and a motor thereon can be raised or lowered, within practicable limits, to any position desired. The pivotal connection between the mounting and support, among other things, promotes safety by permitting the support and motor to swing rearwardly and upwardly when the propeller or any lower part of the motor accidentally strikes an obstruction in the water.

A significant object of the invention is to pivotally mount the fitting on the carriage and provide the driving means with a drive shaft which is universally connected to a driven shaft which engages the fitting in order to compensate for the variable angular relationship between the driven shaft and support resulting from the raising and lowering of the carriage.

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Another object of the invention is to mount the drive shaft in suitable bearings for disposition at an angle so that the universal connection or joint between this shaft and the driven shaft is located in a relatively low depending position, preferably below the pivotal connection between the support and mounting to provide an efficient leverage and driving action.

An important object of the invention is to locate the pivotal connections between the mounting and support sufficiently inwardly from the boat transom to further promote a good leverage action and so that the motor can be swung upwardly and inwardly to any one of a number of desirable positions to permit ready removal or repair thereof.

A specific object of the invention is to provide the support with a connector so that an elongated handle bar can be detachably connected thereto to manually pivot the support and motor to the position above referred to.

Another object of the invention is to construct the support in the form of a cast or rigid frame having side members and provide the side members with guide or track means preferably in the form of grooves which cooperate with projections preferably in the form of tongues formed integrally on the carriage for guiding and stabilizing movement of the carriage relative to the support.

Another object of the invention is to provide the support with bumpers to prevent injury to the boat transom when a motor is supported in an operative position on the assembly.

An additional object of the invention is to provide means on the mounting and means on the support whereby the support, carriage and motor as a unit can be temporarily locked in an elevated pivotal position to facilitate the making of any repairs or adjustments on the motor which would not otherwise be possible when the motor is in its lowermost upright operating position.

A particular object of the invention is to provide the carriage with a bar having extremities extending laterally from the carriage for connection with a unique linkage or system for pivoting the motor to promote steering of the boat.

A further object of the invention is to provide the mounting and the support with stop means so that when the support and motor are swung into the boat to place the motor in an inverted or upside down position, the stops will engage to maintain the motor in this position.

A still further object of the invention is to provide a novel setup whereby a pair of motors may be readily attached to the supporting assembly.

Many other objects and advantages of the structure embodying the invention will become apparent after the description hereinafter set forth is considered in conjunction with the drawings annexed hereto.

In the drawings:

Figure 1 is a perspective view of the motor supporting assembly as applied to the transom of a boat;

Figure 2 is a top view of the assembly as applied to a boat including a unique linkage or system for steering purposes;

Figure 3 is a top view of a part of the assembly with portions in section to illustrate the sliding connection between the carriage and support;

Figure 4 is an elevational side view of the assembly as applied to a boat showing the manner of lifting the motor to either a substantially horizontal or inclined position;

Figure 5 is a top view of a part of the assembly showing details of a locking device for holding the motor in a predetermined or substantially horizontal position; and

Figure 6 is a view showing the assembly constructed for supporting a pair of motors thereon.

Referring more particularly to the drawings, the sup-

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porting assembly includes, among other things, a mounting generally designated 1 for attachment with a boat transom 2, a support 3 pivotally connected to the mounting, a carriage 4 for supporting a motor 5 shown in dotted lines in Figure 4, a pair of guides 6 carried by the support, projections or tongues 7 on the carriage cooperating with the guides, rocker means 8 on the carriage, driving means 9 carried by the support and provided with a drive shaft 10, a driven shaft 11 connected to the rocker means, a universal joint connection 12 between the shafts, and a crank 13 for manipulating the driving means.

Considering more in detail the aforementioned components generally in the order above named, the mounting 1 may be designed and constructed in various ways, but as exemplified in the drawings, preferably comprises a pair of corresponding C-clamps. Each clamp includes an inner depending leg 14 and an outer depending leg 15 which is somewhat longer than the inner leg and bears against the outer side of the boat transom 2 as shown in Figures 1 and 4. The legs of each mounting clamp are joined by a bridge portion 16 which bears against the top edge of the transom and each inner leg is provided with a screw 17 having an abutment thereon for engaging the inner side of the transom. The legs are formed to impart strength thereto and each of the bridge portions preferably includes a tubular portion 18 located at the junction between the bridge and the leg 14 to provide a bearing. A bolt 19 or equivalent means extends through each bearing and the support for pivotally connecting the support 3 to the clamps, at a location spaced inwardly from the transom in order to obtain a good leverage action when the assembly and motor are swung to either of the positions shown in Figure 4 and at the same time locate the motor farther inwardly to a better position to facilitate making repairs thereon.

The support 3 which is pivoted on the mounting comprising the C-clamps may be designed and constructed in different ways but as shown is preferably in the form of an inverted generally L-shaped rectangular frame which is more or less nestingly received between the C-clamps. The support is preferably cast and includes a pair of upstanding corresponding side members 20 having substantially horizontal offsets 21 extending rearwardly from their upper ends so that the members and offsets are disposed in an acute angular relationship. The side members are preferably joined together by a lower bridge portion 22 and an upper bridge portion 23 and the offsets by a horizontal bridge 24. The bridge 24 is provided with an angularly disposed tubular portion 25 within which the drive shaft 10 is journaled. The outer end of this shaft is provided with a hexagonal portion 26, disposed substantially in a counterbore of the portion 25, for reception in a hexagonal socket 27 of the hand crank 13 for driving the shaft. The inner end of the drive shaft is provided with a clevice 28 keyed thereto and the upper end of the driven shaft with a clevice 29 keyed thereto. The arms or furcations of the clevices are operatively connected together by a connector 30 having pins or axle portions extending from or through the connector into holes provided therefor in the arms for pivotally connecting the connector to the clevices to provide a universal joint or coupling therebetween. The connector is also preferably provided with a fitting 31 for applying grease to the pivotal connections. As alluded to above this universal connection is preferably located below the pivotal connections between the support and the C-clamps in order to provide an efficient leverage action therebetween when the crank is operated.

The side members of the support are also preferably provided with upper and lower pairs of bumpers 32 for engaging or abutting the rear side of the boat transom to prevent damage thereto and at the same time serve as shock absorbers and dampen the thrust and vibration between the motor and boat.

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The side members 20 of the support are provided with the guides 6, above referred to, which are preferably in the form of longitudinal grooves or slots. The grooves are opposed and provide guide means or racks which slidably receive the longitudinal tongues or projecting portions 7 formed on the carriage 4. The sizes and lengths of the grooves and tongues are sufficient to provide a stable and well balanced construction affording efficient relative movement between the carriage and support.

The carriage is preferably cast and generally square in shape and includes an inner wall 33 provided with a clearance notch 34 for the driven shaft, a pair of side walls 35 and an outer wall 36 providing a transom for the motor. The side walls converge toward the inner wall and the tongues 7 project laterally from the side walls at their junction with the inner wall. The side walls are thickened to provide bosses 37 and a pair of pivot pins 38 extend through the bosses and upturned ends of the fitting 8 which is preferably in the form of a rocker 39 for pivotally or rockably mounting the rocker on the carriage. The upturned ends of the rocker are joined by a base having a centrally disposed internally threaded tubular portion 40 which receives the threaded driven shaft in a manner whereby the rocker will rock relative to the carriage whenever this shaft is rotated by the drive shaft. It will be noted that the connections between the rocker and carriage are located adjacent the lower extremities of the side walls and relatively close to the inner wall so as to promote the sliding action between the carriage and support and thereby prevent cramping or binding. A block of wood 41 or equivalent means is preferably detachably affixed against the outer surface of the outer wall of the support so that this wall and the block jointly serve or constitute a transom or support for the motor. This transom is spaced a desirable distance from the inner wall of the carriage. It will be noted that the carriage is open at its top and bottom to provide clearance for the driven shaft extending diagonally therethrough, for reception of a motor bracket and manipulation of clamping screws thereon.

The carriage and motor thereon may be readily raised relative to the support by merely applying the crank 13 to the hexagonal end 26 of the drive shaft 10 and rotating the crank in one direction or lowered by rotating the crank in a reverse direction, depending on the driving conditions desired. Also, the support, carriage and motor thereon may be readily swung upwardly to the substantially horizontal dotted line position illustrated in Figure 4 and held in this position by any suitable holding means. The holding means illustrated includes an elongated element 42 having its upper end pivoted at 60 on one of the C-clamps at the junction between its outer depending leg and bridge. The adjacent side member of the support is provided with a pin 43 which projects through a longitudinal slot 44 provided in the element. A washer or abutment is provided on the pin for holding the element on the pin. The element is also provided with a notch or abutment means 45 which is adapted to receive the pin when the support, carriage and motor thereon are manually raised or lifted to the substantially horizontal position shown in Figure 4. The connecting relationship of the element, support and C-clamp is such that when the motor is raised the element, due to its weight or gravity, will cause the notch to automatically receive the pin on the support. In this way it is unnecessary to manually hold the motor in the counterbalanced horizontal position shown when making repairs or adjustments thereto.

Any means suitable for the purpose may be employed to swing the motor about the axes of the pivot bolts 19, but as herein shown, the means employed for this purpose includes a member or connector 46 and a lever 47. The member is preferably in the form of a short length of cylindrical rod detachably secured by screws in a

grooved or channel formation 48 provided on that side wall of the carriage adjacent the outer leg of the support to which the element 42 is connected. The upper end of the member extends slightly above the carriage for reception in a socket provided in the lever. This side wall of the carriage adjacent the channel formation is preferably recessed to receive the lever in a manner to stabilize its connection with the member. The lever is of a sufficient length and the member is preferably located on the carriage to afford a good leverage action. The arrangement is preferably such that the support, carriage and motor thereon can be swung within an arc in excess of 180 degrees with respect to the mounting regardless of the position of the carriage and motor on the support, but, in general practice, the carriage and motor are first raised or elevated to an uppermost position before the support, carriage and motor as a unit are pivoted with respect to the mounting.

As alluded to above, the support, carriage and motor as a unit can be swung to the horizontal position shown and held in this position by the element 42, or, if desired, it may be swung farther to an inverted or substantially upside down position in the boat to facilitate making repairs or, for example, the replacement of a sheared pin adjacent the propeller, which would not ordinarily be possible if the motor were limited for movement only to the horizontal position. The mounting clamps are preferably provided with inturned abutments which are engaged by the offsets of the support for mounting the motor, carriage and support in the inverted position shown. It is to be noted that the outer wall 36 of the carriage is preferably provided with a pair of abutments 49 which serve as stops behind which the pressure feet of the clamping screws on the motor bracket can be located to assist in holding or preventing accidental release of the motor with respect to the transom.

Attention is directed to the fact that when the motor is locked in the horizontal position, the motor can be easily and quickly slid off the transom of the carriage. Of further importance is the fact that when the motor is swung into the boat there is no chance of losing the motor while repairs are being made.

As alluded to above, unique means are provided to facilitate steering of the boat. The means utilized for this purpose preferably includes an elongated bar 50 which is detachably secured to the upper edge of the wooden block 41 by screws so that the extremities of the bar project laterally from the sides of the carriage. Pulleys 51 are mounted on the ends of the bar and a pair of ropes or cables 52 are operatively connected to the pulleys and a fitting 53 on the motor. More specifically in this regard, each rope extends through an opening in the boat transom and a pulley with its outer end connected to the fitting. The inner end of each rope extends into the boat for manipulation such as by a steering wheel. This novel linkage or system serves to appreciably increase the leverage action to facilitate easy or efficient movement of the motor and at the same time prevent entanglement of the ropes with the motor and assembly.

As set forth above, one of the objectives is to provide a unique setup for supporting a pair of motors. This is preferably accomplished as exemplified in Figure 6, when the outer wall of the carriage is provided with a board 54 of a length greater than the board 41 so that its extremities project laterally from the carriage. More specifically, the arrangement is such that the frontal portions 55 of a clamp or clamps on one motor engage the outer surface of the board 54 and rear portions 56 of the clamp or clamps respectively engage the rear surface of the board and the rear surface of the outer wall of

the carriage, and the same is true of portions 57 and 58 of the clamp or clamps on the other motor. The motors (not shown) are spaced apart in a balanced relationship.

The rear side of the outer wall of the carriage is provided with a centrally disposed channel formation 59 similar to the channel formation 48 and when two motors are utilized the member 46 is removed from the formation 48 and then secured in the formation 59 for connection with the lever 47 for swinging the support, carriage and motors thereon as a unit relative to the mounting clamp means.

Having thus described my invention, it is obvious that various modifications may be made in the same without departing from the spirit of the invention, and, therefore, I do not wish to be understood as limiting myself to the exact form, construction, arrangement, and combination of parts herein shown and described.

I claim:

1. An assembly of the kind described comprising a mounting structure for attachment to the transom of a boat, a one-piece support having substantially horizontal portions pivotally connected to the mounting structure and having depending portions provided with longitudinal guides, a carriage for a motor, said carriage having means slidable in the guides, a fitting pivotally mounted on the carriage, a driven shaft threadedly connected to the fitting and normally disposed in an acute angular position with respect to the support, a bridge formed integrally with and joining the horizontal portions of the support, a tubular bearing formed integrally with the bridge and having an axis disposed at an oblique angle with reference to the plane formed by said depending portions, a drive shaft journaled in the bearing, and a universal joint connecting said shafts to compensate for any variable angular relationship occurring between the driven shaft and the depending portions of the support when the drive shaft is operated to cause the said means on the carriage to slide in the guides.

2. The assembly defined in claim 1, in which the carriage is provided with a transom having laterally extending arms for connection with a steering mechanism.

3. The assembly defined in claim 1, in which the carriage is provided with a rear wall and a transom is secured thereto with portions extending outwardly therefrom so as to facilitate attachment of a pair of motors therewith.

4. The assembly defined in claim 1, in which the carriage includes: a pair of side walls and a transom is secured to and transversely of the carriage with portions of the transom extending laterally from the side walls so that a pair of motors can be clamped to the transom in spaced apart relationship, and means disposed between the side walls for attachment with a lever to facilitate pivoting of the support and carriage as a unit with respect to the mounting structure.

References Cited in the file of this patent

UNITED STATES PATENTS

1,152,425	Lovell	Sept. 7, 1915
1,973,166	Fowler	Sept. 11, 1934
2,527,904	Baldwin	Oct. 31, 1950
2,627,833	Schroeder	Feb. 10, 1953
2,668,679	Harneit	Feb. 9, 1954
2,706,961	Barber	Apr. 26, 1955
2,714,362	Schroeder	Aug. 2, 1955
2,757,888	Branstrator	Aug. 7, 1956
2,764,119	Sigler	Sept. 25, 1956
2,808,218	Steller	Oct. 1, 1957