April 3, 1956 D. D. KLOSS 2,740,602

OUTBOARD MOTOR MOUNTING MECHANISM

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Fig. 1

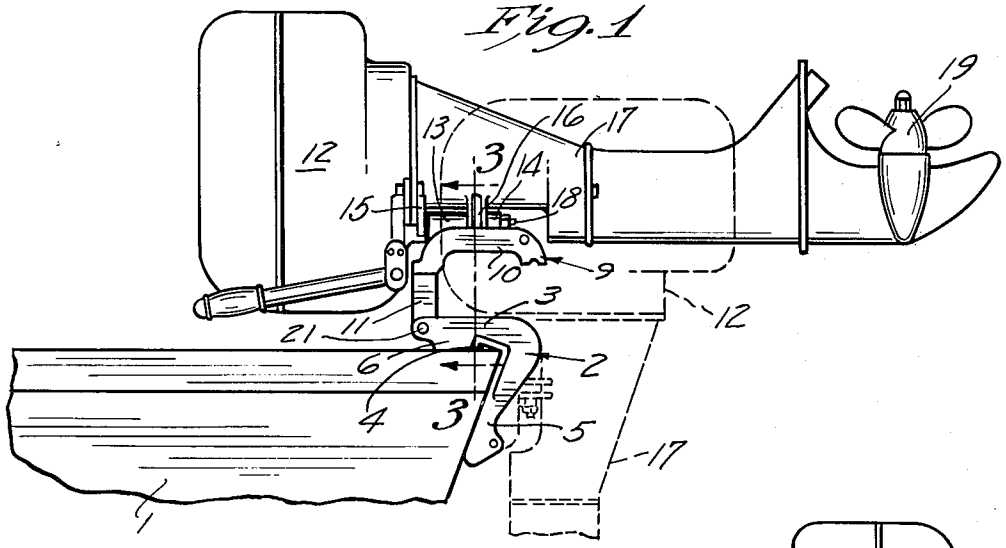
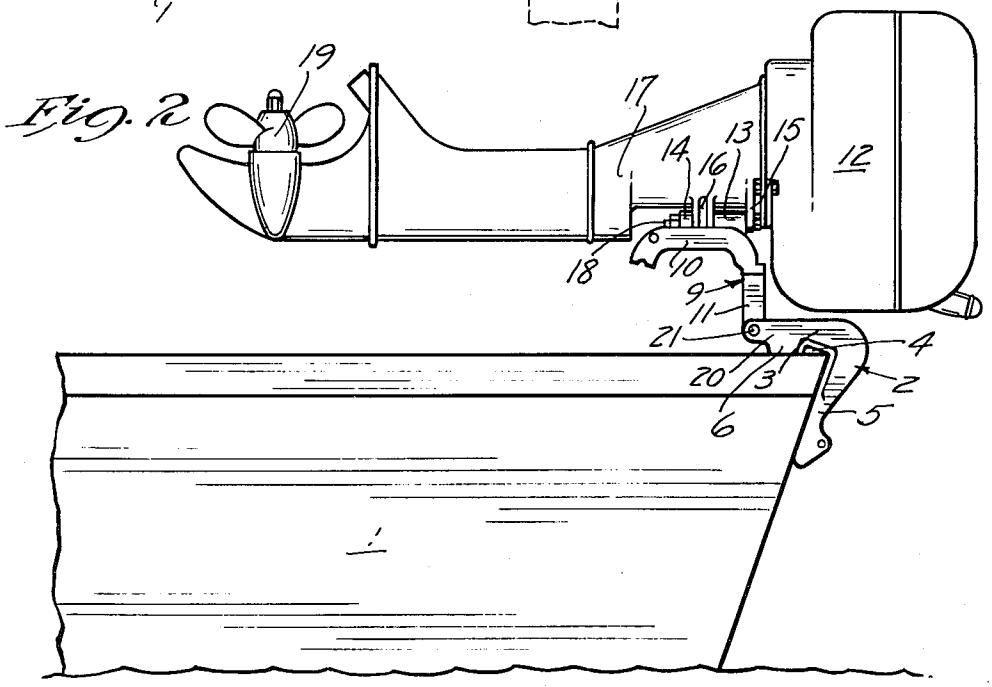


Fig. 2



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Fig. 3

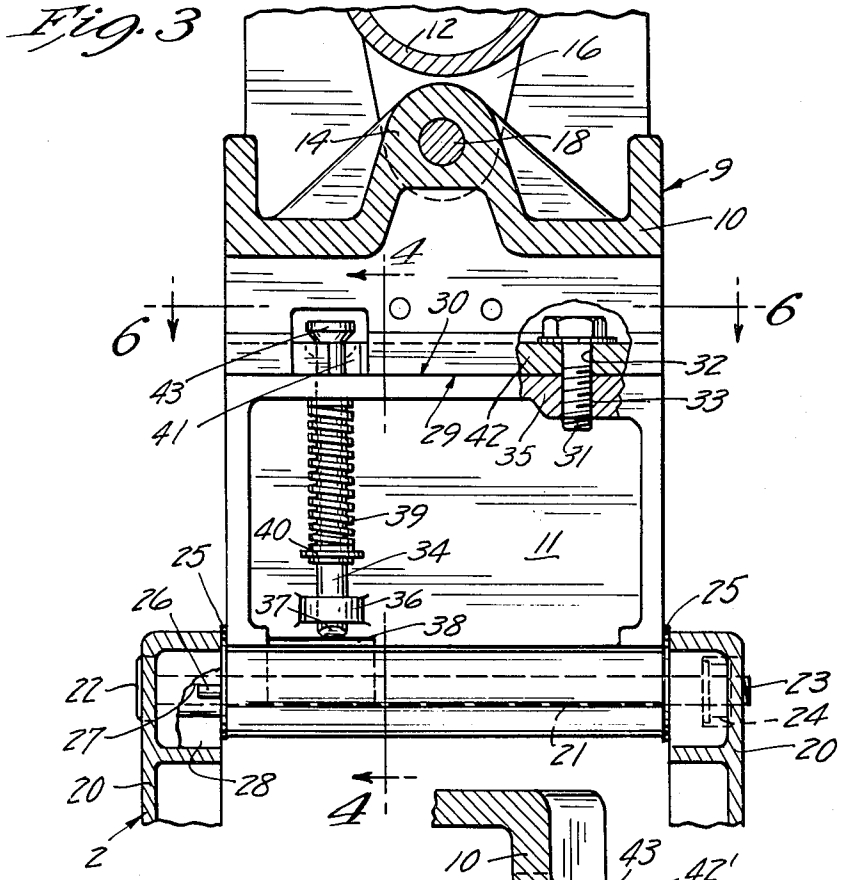
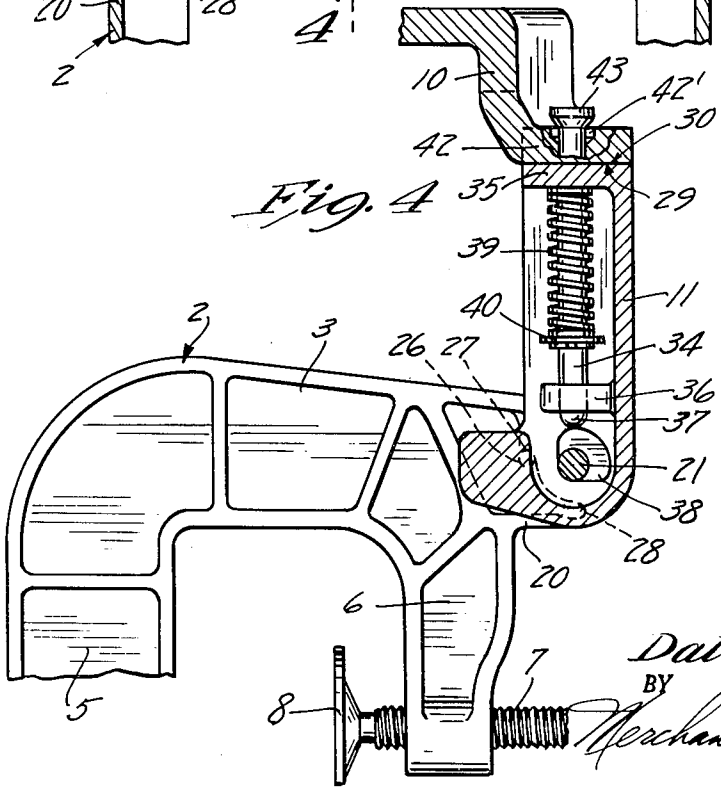


Fig. 4



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Fig. 5

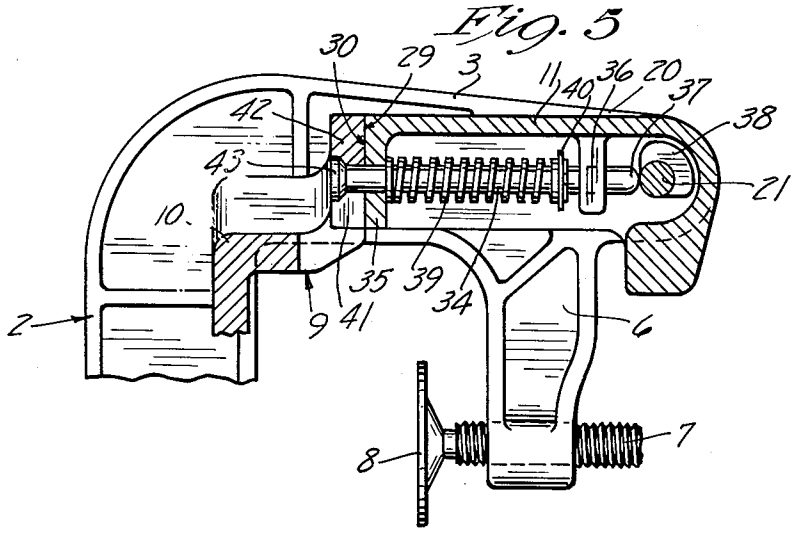


Fig. 6

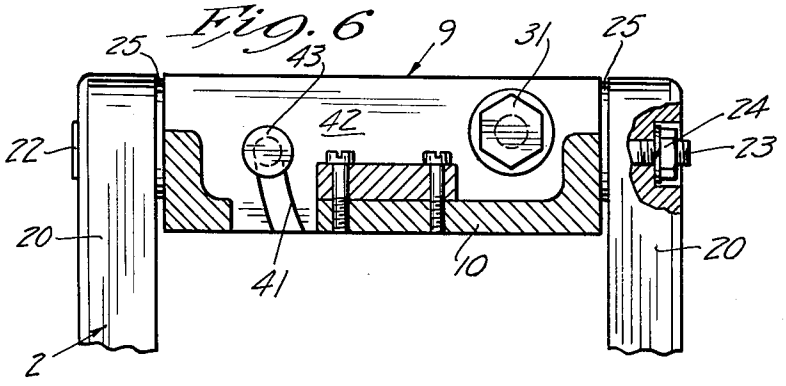
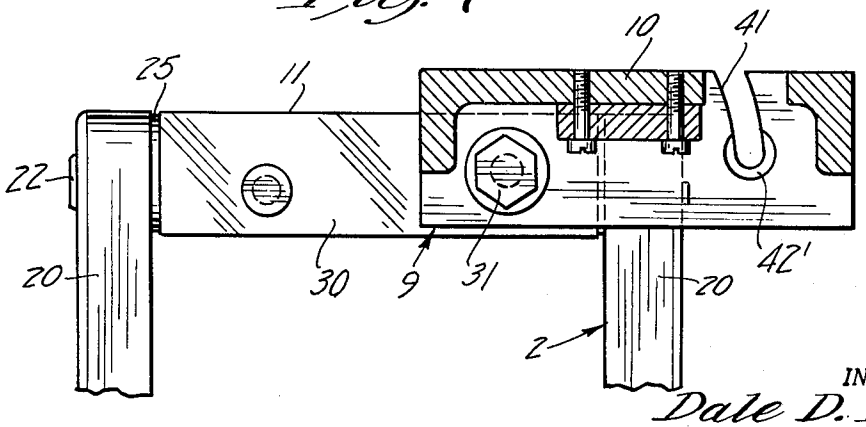


Fig. 7



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OUTBOARD MOTOR MOUNTING MECHANISM

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Application December 18, 1952, Serial No. 326,747

4 Claims. (Cl. 248—4)

My invention relates generally to outboard motors and more particularly to novel means for mounting an outboard motor to the transom or stern board of a boat.

An important object of my invention is the provision of mounting means for an outboard motor which will permit the motor to be swung from a normal generally vertical position behind the transom of a boat to a horizontal inoperative position above the transom and thereafter swung about a generally vertical axis in a manner to bring the propeller end of the motor forwardly of the transom and in overlying relation to the boat for the purpose of clearing the propeller of weeds or grass, replacing a shear pin, or for other like purposes.

Another important object of my invention is the provision of outboard motor mounting means of the above type having pivot means by which the motor may be tilted from its normal generally vertical position to its inoperative horizontal position and releasable means which will permit the motor to be rotated to bring the propeller end thereof into the boat permitting such swinging of the motor when the same is in its horizontal inoperative position and which will automatically lock the motor against such movement when the same is disposed in its operative generally vertical position.

Otherwise stated, my invention comprises a transom clamp and a two-part motor mounting bracket involving first and second bracket elements, the former of which is adapted to be pivotally secured to an outboard motor and the second of which is pivotally secured to the transom clamp for swinging movements about a horizontal axis extending transversely of the boat, pivot means connecting the first and second bracket elements for relative movements about an axis substantially at right angles to the motor steering axis and at one side of the vertical plane of the steering axis and releasable locking means laterally spaced from the pivot means between the bracket elements and on the other side of said vertical plane whereby to provide a relatively wide and rigid connection between said first and second bracket elements.

Another object of my invention is the provision of an outboard motor mounting device as set forth which is relatively inexpensive to produce, which is efficient in operation and which is rugged in construction and durable in use.

The above and still other highly important objects and advantages of my invention will become apparent from the following detailed specification, appended claims and attached drawings.

Referring to the drawings, which illustrate the invention and in which like reference characters indicate like parts throughout the several views:

Fig. 1 is a view in side elevation of the stern end portion of an outboard motor-equipped boat illustrating the use of my novel outboard motor mounting device;

Fig. 2 is a view corresponding to Fig. 1 but showing a different position of some of the parts;

Fig. 3 is an enlarged fragmentary view partly in rear elevation and partly in section taken substantially on the line 3—3 of Fig. 1;

Fig. 4 is a vertical section taken on the line 4—4 of Fig. 3;

Fig. 5 is a view corresponding to Fig. 4 but showing a different position of some of the parts;

Fig. 6 is a horizontal section taken on the line 6—6 of Fig. 3; and

Fig. 7 is a view corresponding to Fig. 6 but showing a different view of some of the parts.

Referring with greater detail to the drawings, the numeral 1 indicates a conventional boat of the outboard motor propelled variety such as a row boat or the like. A transom clamp 2 is formed to provide a horizontal intermediate portion 3 which is adapted to rest upon the upper end of the transom 4 of the boat 1 and inner and outer clamping legs 5 and 6, the former of which is adapted to engage the rear side of the transom 4 and the latter of which is provided with clamping screws 7, the inner disc-like ends 8 of which are adapted to be screw threaded into clamping engagement with the inner front sides of the transom 3.

A two-part mounting bracket 9 comprises first and second bracket elements 10 and 11 respectively to the former of which is adapted to be connected for pivotal steering movements to an outboard motor 12. The bracket element 10 is provided with a pair of lugs 13 and 14 upon which are adapted to rest respectively lugs 15 and 16 which extend forwardly of the propeller shaft housing 17 of the motor 12. A pivot or steering pin or bolt 18 extends through the lugs 13 to 16 inclusive and permits steering movements to be imparted to the motor and its propeller 19. The steering axis of the motor 12 extends substantially vertically when the motor is disposed in its operative position behind the transom 3 of the boat 1 as indicated by dotted lines in Fig. 1.

The transom clamp 2 is bifurcated to provide an intermediate space for the reception of the mounting bracket 9. The transom clamp 2 is also formed to provide a pair of forwardly extending arms 20 which are connected by a transverse shaft 21 having a head 22 at one end and a diametrically reduced threaded portion 23 at its other end on which is screw threaded a lock washer-equipped anchoring nut or the like 24. The shaft 21 is frictionally locked by the nut 24 against rotation with respect to the transom clamp 2 for a purpose which will hereinafter become apparent. The second bracket element 11 is journalled on the shaft 21 for swinging movements about a generally horizontal axis extending transversely of the boat 1. With reference to Figs. 3, 6 and 7, it will be seen that a pair of spacing washers 25 are mounted on the shaft 21 between the opposite sides of the second bracket element 11 and the adjacent arms 20 of the transom clamp, whereby to provide smooth bearing surfaces therebetween and to prevent axial movement of the bracket element 11 with respect to the transom clamp 2. Swinging movement of the bracket element 11 with respect to the transom clamp 2 is limited by a stop pin 26 which projects axially outwardly of one side of the bracket element 11 and through an adjacent washer 25, and a pair of stop shoulders 27 and 28 formed in the end portion of the adjacent transom clamp arm 20, see Figs. 3 and 4. When the motor 12 is in its operative dotted line position of Fig. 1, the stop pin 26 is disposed closely adjacent the stop shoulder 28 or in engagement therewith, depending upon the angle of the transom 3 with respect to the vertical. It may be assumed that the bracket element 10 and the transom clamp 2 are provided with conventional adjustment means, not shown, for maintaining the motor in a substantially vertical po-

sition in its operative state. This adjustment means does not comprise the instant invention, hence the same is not shown or described in detail. When the motor is raised to its inoperative generally horizontal position as shown in full lines in Figs. 1 and 2, the stop pin 26 engages the stop shoulder 27 whereby to limit tilting movements of the motor in an inoperative direction.

The front and rear ends of the bracket elements 10 and 11 respectively provide relatively wide abutting surfaces 29 and 30 respectively. A pivot bolt 31 extends through an aperture 32 in the first bracket element 10 and is screw threaded into a threaded aperture 33 in the second bracket element 11, see Figs. 3, 6 and 7. The bolt 31 permits swinging movement of the first bracket element 10 and the motor 12 mounted thereon with respect to the second bracket element 11 about an axis at right angles to the steering axis of the motor 12, or in other words, the axis of the pivot bolt or shaft 18, and at one side of the vertical plane of said steering axis. With reference to Figs. 3, 6 and 7, it will be seen that the pivot bolt 31 is located adjacent one side of the mounting bracket elements 10 and 11. As clearly shown, when the bracket 9 and the motor 12 carried thereby are tilted to the motor inoperative position of Fig. 1, the axis of the pivot bolt 31 extends in a substantially vertical direction. In this position of the bracket 9, the bracket element 10 and the motor carried thereby may be rotated about the axis of the pivot bolt 31 to bring the propeller end of the motor 12 into overlying relationship to the boat 1 forwardly of the transom 3 thereof and as shown in Fig. 2. With the motor thus positioned, the propeller 19 may be removed without danger of dropping the same or any of the parts associated therewith into the water.

While it is important that the motor be provided with means whereby the propeller end thereof may be swung into its position of Fig. 2 when the motor is in its inoperative generally horizontally position, and for the purpose of facilitating repairs to the propeller end thereof, it is equally important that the motor be locked against such swinging movement when the same is in its generally vertical operative position behind the transom 3 and as indicated by dotted lines in Fig. 1.

I therefor provide automatic means for locking the first bracket element 10 against swinging movements about the axis of the pivot bolt 31 when the motor is in its operative position, and for automatically releasing the bracket 10 for said swinging movement when the motor is tilted to its inoperative horizontal position, said means now to be described. A locking pin 34 is mounted for axial sliding or reciprocatory movements in the rear end wall 35 of the second bracket element 11 and a bearing boss 36 located slightly rearwardly of the shaft 21. The forward end 37 of the pin 34 engages a cam member 38 integrally formed with the stationary shaft 21, whereby, when the bracket 9 is tilted from its dotted line normal position of Fig. 1 to its full line position thereof, the pin 34 will be moved axially in one direction. A coil compression spring 39 encompasses the pin 34 and is interposed between the rear end wall 35 of the bracket element 11 and a stop washer 40 suitably anchored to the pin 34, see particularly Figs. 3, 4 and 5. With reference particularly to Figs. 3, 6 and 7, it will be seen that the pin 34 is disposed parallel to the pivot bolt 31 and is located on the opposite side of the vertical plane of the steering axis of the motor 12 and adjacent the opposite side of the bracket element 11 from the pivot bolt 31. The pin 34 extends rearwardly of the rear wall 35 and is adapted to be received in an arcuate slot 41 in the front wall 42 of the first bracket element 10. Preferably and as shown, the slot 41 describes an arc, the center of which is common with the axis of the pivot bolt 31, and at its inner end is countersunk to provide an enlarged recess 42'. The rear end of the pin 34 is formed with an enlarged head 43 which is adapted to fit snugly into the recess 42' when the motor

12 is positioned with respect to the second bracket element 11, as shown in Fig. 1.

In operation, when the motor is in its generally vertical position behind the transom of the boat, the pin 34 is spring biased into seating engagement of the head 43 thereof in the recess 42', see Fig. 5. This seating engagement effectively prevents swinging movement between the motor and the transom clamp 2 about the axis of the pivot bolt 31. However, when the motor 12 is tilted to its full line inoperative horizontal position of Fig. 1, the cam member 38 moves the locking pin 34 in a direction to unseat the head 43 thereof out of seating engagement with the recess 42' against bias of the spring 39, see Figs. 3 and 4. The bracket element 10 and the motor carried thereby may then be swung to their positions of Figs. 2 and 7 whereby to bring the propeller end of the motor in overlying relationship to the boat forwardly of the transom 3 thereof. With the motor in this position, the relationship of the shaft 21 to the head of the motor 12 is such that, if the motor 12 is tilted rearwardly and downwardly, the head thereof will engage the top of the transom clamp 2 and will be prevented thereby from further downward swinging movement. When it is again desired to operate the motor, the same is rotated to its full line position of Fig. 1 until the locking pin 34 bottoms in the slot 41. The head 43 of the pin 34 will then be in axial alignment with the recess 42'. Thus when the motor is tilted downwardly toward its operative vertical position, the cam member 38 will permit the spring 39 to move the pin 34 forwardly until the head 43 is seated in the recess 42' whereby to rigidly lock the bracket elements 10 and 11 against relative movements with respect to each other. The relatively wide spacing between the pivot bolt 31 and the locking pin 34, together with the relatively large surface area of the wall surfaces 29 and 30, insures a firm mounting between the bracket elements and relative movement therebetween due to vibration of the engine is held at a minimum.

My invention has been thoroughly tested and found to be completely satisfactory for the accomplishment of the objectives set forth; and while I have shown and described a commercial embodiment of my novel motor mounting means, it will be understood that the same is capable of modification as to structure and arrangement of parts without departure from the spirit and scope of the invention as defined in the claims.

What I claim is:

1. In an outboard motor mounting device comprising a transom clamp and a two-part bracket including a pair of cooperating bracket elements, one of said bracket elements being adapted to be pivotally mounted to an outboard motor for steering movement about a normally vertical axis and the other of said bracket elements being pivotally secured to said transom clamp for swinging movement about a horizontal axis extending parallel to a boat transom when the transom clamp is applied thereto; means pivotally connecting said one bracket element to the other bracket element for relative rotation about an axis at right angles to said horizontal axis of swinging movement, and mechanism for automatically locking said bracket elements against said relative rotation when said other bracket element is moved in one direction of the swinging movement relative to the transom clamp and for automatically releasing said bracket elements for relative rotation to each other responsive to swinging movement of the other bracket element in the opposite direction, said mechanism comprising a locking member mounted on said other bracket element for common swinging movement therewith about said horizontal axis relative to said transom clamp and for independent movement relative thereto toward and away from locking engagement with a cooperating means on said one bracket element, and a stationary actuator on said transom clamp engaging said locking member to impart said independent movement thereto in a direction to re-

lease said locking member from said cooperating means to free said bracket elements for said relative rotation during swinging movement of said other bracket element in said opposite direction.

2. The structure defined in claim 1 in which said locking member comprises an elongated pin axially slidably mounted on said other bracket element, said cooperating means on said one bracket element comprises a recess for the reception of a portion of said pin, and yielding means biasing said pin toward locking engagement with the recess of said one bracket element, said stationary actuator comprising a cam engaging said pin to move the pin out of locking engagement with said recess against bias of said yielding means.

3. In an outboard motor mounting device comprising a transom clamp and a two-part bracket including a pair of cooperating bracket elements, one of said bracket elements being adapted to be pivotally mounted to an outboard motor for steering movement about a normally vertical axis and the other of said bracket elements being pivotally secured to said transom clamp for swinging movement about a horizontal axis extending parallel to a boat transom when the transom clamp is applied thereto; said bracket elements having elongated adjacent sides normally in face-to-face contact with each other, means adjacent one end of said sides pivotally connecting said bracket elements to each other for relative rotation about an axis at right angles to the said horizontal axis of swinging movement, a locking pin axially slidably mounted on said other bracket element adjacent the other end of said sides for independent movement relative to the bracket elements toward and away from locking engagement with a cooperating means on said one bracket element, a head on one end of said pin, said cooperating means including an open-ended arcuate slot having the center thereof common with the axis of relative rotation of said bracket elements, said slot having a recess opposite the open end thereof, said recess being of greater width than the slot for reception of the head of said pin, and an actuator carried by said transom clamp and engaging said locking pin to impart said independent movement thereto in a direction to release said locking pin from said recess to free said one bracket element for said relative rotation during swinging movement of said other bracket element in said opposite direction.

4. The structure defined in claim 3 in further combination with a coil spring yieldingly urging said pin in a direction to cause the head thereof to be received in said recess, and in which said actuator comprises a stationary cam which engages the end of said pin opposite the head thereof to move the head out of said recess against bias of said spring upon swinging movement of the other bracket element in said opposite direction.

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