July 20, 1954 E. C. KIEKHAEFER 2,684,044

CLAMP BRACKET FOR OUTBOARD MOTORS

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Fig. 1

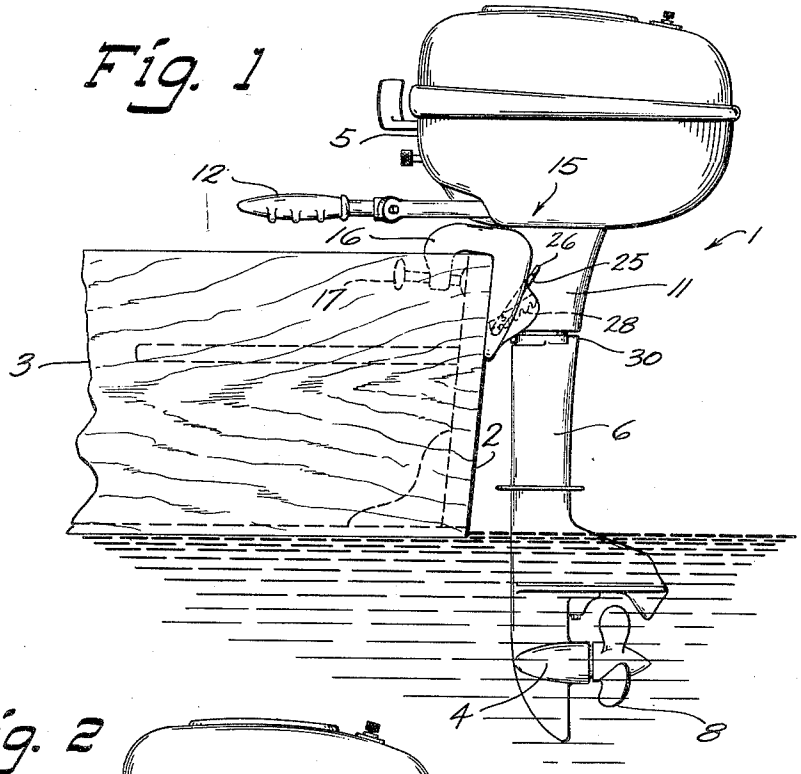
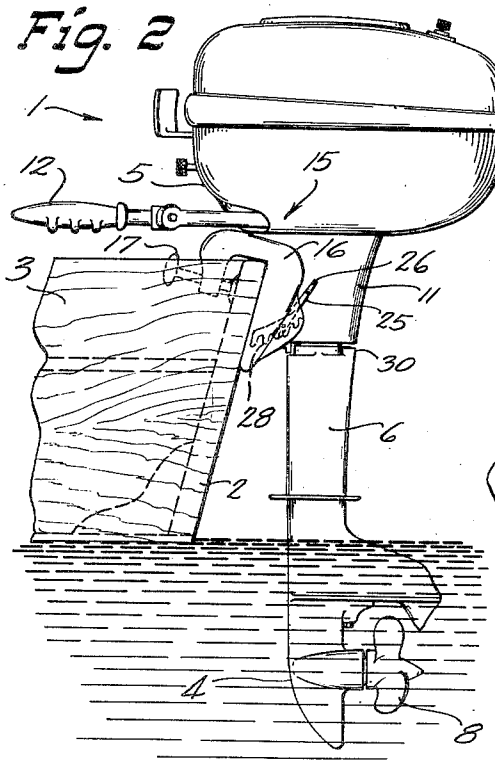


Fig. 2



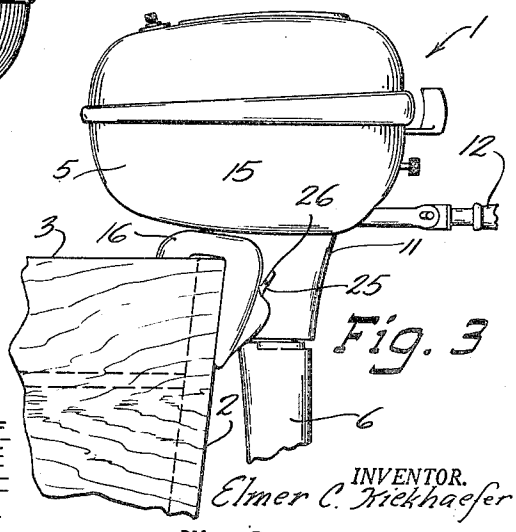


Fig. 3

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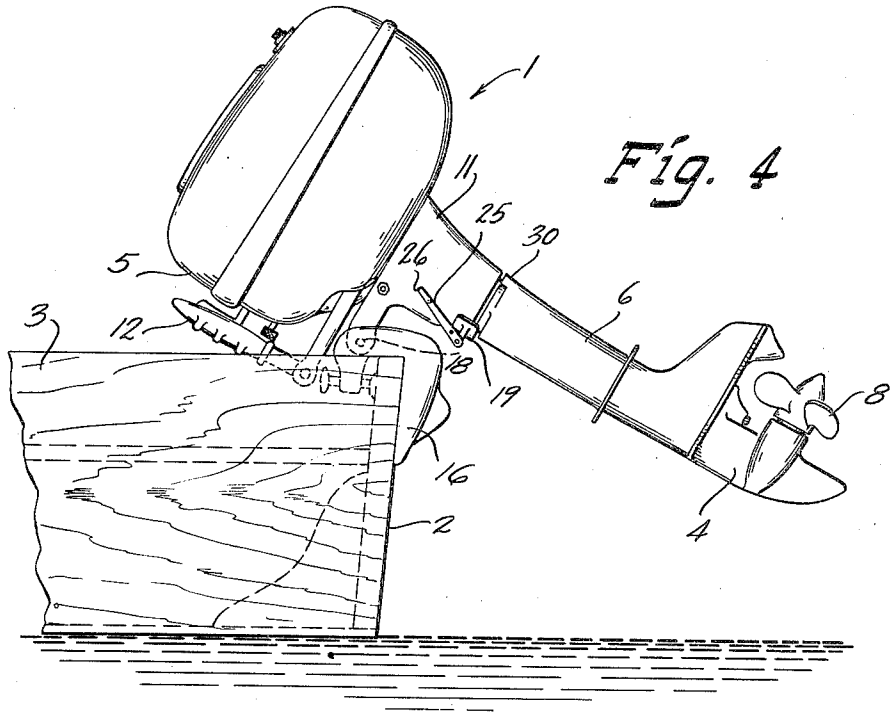


Fig. 4

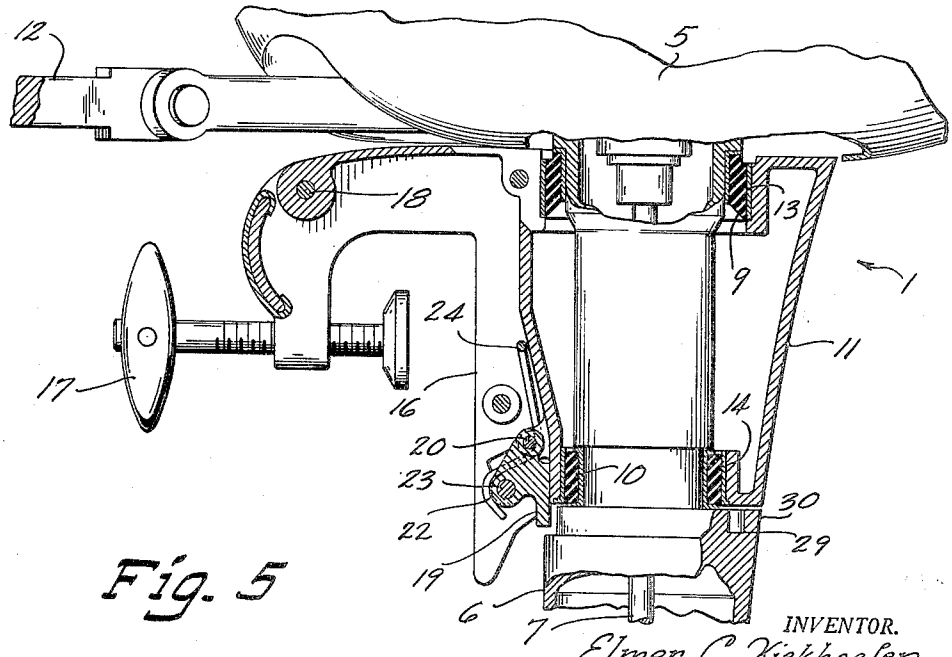


Fig. 5

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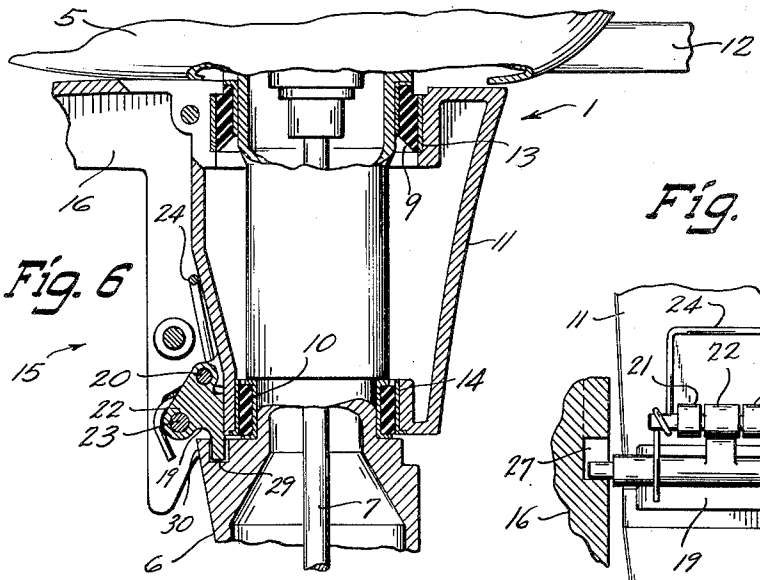


Fig. 6

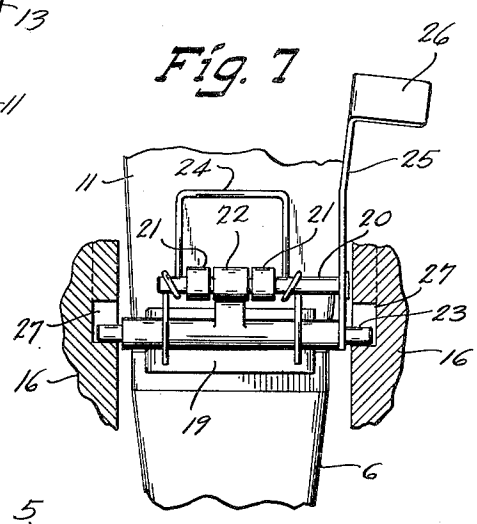


Fig. 7

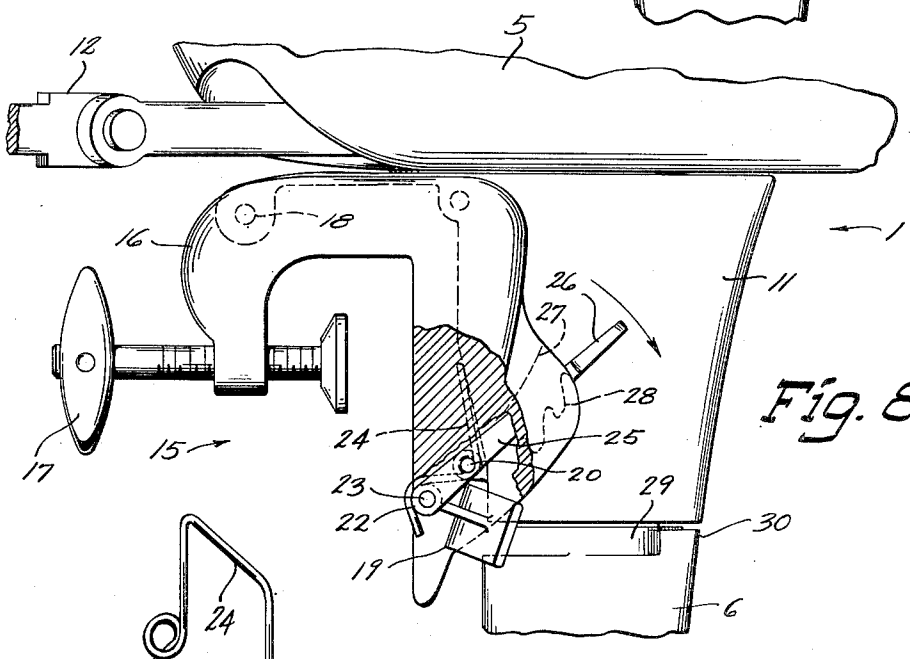


Fig. 8

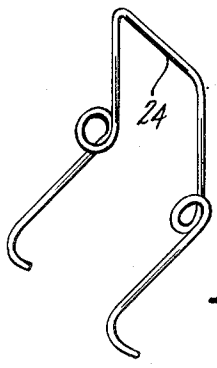


Fig. 9

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CLAMP BRACKET FOR OUTBOARD MOTORS

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2 Claims. (Cl. 115—18)

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This invention relates to outboard motors and particularly to the supporting bracket therefor.

A principal object of the invention is to provide for the more convenient adjustment of the tilt of the motor by adjusting the bracket to accommodate boats having transoms of differing angular positions or rake.

Another object is to provide for the quick adjustment of the tilt bracket with a minimum of effort.

Another object is to provide a positive locking of the motor against tilting in reverse operation.

Another object is to make the tilt adjustment immediately accessible to the operator within the boat without difficult mechanical actuating means.

Another object is to provide a more simple, inexpensive and foolproof tilt adjustment.

These and other objects and advantages will be more fully set forth in the following description of a preferred embodiment of the invention as illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a side elevation of an outboard motor secured to the end of a boat having a transom which is nearly vertical.

Fig. 2 is a view similar to Fig. 1 showing the motor adjusted and attached to a boat having a transom of considerable angularity;

Fig. 3 is a view showing the motor in the full reversed position;

Fig. 4 is a side elevation of the motor tilted forwardly with the propeller out of the water;

Fig. 5 is a detailed vertical longitudinal section through a part of the supporting bracket of the motor;

Fig. 6 is a view similar to Fig. 5 showing the motor in the full reversed position;

Fig. 7 is a front elevation of the movable member and handle of the tilt adjustment;

Fig. 8 is a side elevation of the supporting bracket with a portion thereof broken away and showing the handle in the disengaged position of adjustment; and

Fig. 9 is a perspective view of the spring employed to retain normally the movable tilt lock member in a locked position.

The outboard motor 1, shown in the drawings, is secured to the transom 2 of the boat 3 so

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that the lower unit 4 of the motor is disposed under water. The outboard motor 1 includes the engine 5 and the drive shaft housing 6 extending beneath the engine and enclosing the drive shaft 7 which drivingly connects the engine 5 and the propeller 8 carried by underwater unit 4. The upper and lower circular resilient mountings 9 and 10, respectively, extending around housing 6 and carrying motor 1 are disposed to support the motor in bracket 11 for full rotation on a vertical axis for the full directional control of the boat. The handle 12 extending forwardly of motor 1 is provided for normal steering of the boat as by turning of the motor.

The swivel bracket 11 comprising preferably a single cast member is provided with upper and lower machined inner bearing surfaces 13 and 14 which carry upper and lower resilient mountings 9 and 10, respectively, and through which drive shaft housing 6 extends.

The clamp bracket 15 is adapted to be secured to transom 2 of boat 3 by means of the threaded clamp screws 17 and comprises spaced right and left clamping members 16 disposed on either side of bracket 11.

The tilt pin 18 extends horizontally and transversely through swivel bracket 11 and is pivotally carried at each projecting end in opposite bracket members 16 to provide for tilting of the motor relative to the boat and raising of propeller 8 out of water, as shown in Fig. 4.

For the efficient operation of motor 1, drive shaft housing 6 should be secured with respect to transom 2 of boat 3 so that the housing is disposed vertically and so that the thrust of propeller 8 is not misdirected too far upwardly or downwardly.

The invention is directed to the provision of improved convenient means by which the motor is readily adjusted for efficient operation with different boats and providing further a positive safety reverse lock to prevent tilting of the motor in the reverse direction of operation.

The block 19 which fits the forward side of bracket 11 near the lower end thereof and projects downwardly therefrom is pivotally carried by bracket 11 by means of the pin 20. Pin 20 extends transversely through the spaced lugs 21 formed integrally with bracket 11 and the lug 22 integrally formed with block 19. The spring

24 is carried by pin 20 on opposite sides of lugs 21 and engages bracket 11 normally to bias block 19 tightly against the bracket. The operating lever 25 is mounted on pins 20 and 23 to extend rearwardly and upwardly on one side of bracket 11 beneath engine 5 and is provided with a finger tab 26 at its outer end for manipulation by the operator of motor 1.

The oppositely facing slots 27 on the inside of bracket members 16 are formed to receive the projecting ends of pin 23 and are curved to allow pin 23 to move freely therein as the motor pivots on pin 18 when block 19 is moved away from bracket 11 by means of lever 25. The slots 27 are open at the rear to allow pin 23 to leave the slots as the motor is tilted out of the water, as shown in Fig. 4.

Notches 28 are spaced to provide a plurality of selected positions of engagement with pin 23 carried by bracket 11. The notches 28 are formed in the lower side of slots 27 and engage pin 23 when lever 25 is released and block 19 is biased by spring 24 against bracket 11. Notches 28 are inclined on corresponding sides with respect to the path of movement of pin 23 to allow pin 23 to ride over the notches in the direction in which motor 1 is tilted forwardly and out of water and to engage pin 23 upon movement of motor 1 in the opposite direction.

In the installation of motor 1 on boat 3 the bracket 15 is first tightly secured to transom 2 of the boat by means of clamp screws 17. Since the transoms of all boats are not uniform with respect to the load water line of the boat, the motor 1 will be carried at various angles with different boats and so that propeller 8 is directed upwardly or downwardly with a decrease in the efficiency of the unit.

The invention provides a single, easily operated lever 25 which is readily accessible to the operator and which allows the motor to be set at the required angle with respect to bracket 15 and transom 2 so as to be vertically disposed and afford maximum propeller efficiency. By depressing tab 26 the ends of pin 23 are lifted so as to be movable within slots 27 and motor 1 may then be tilted rearwardly and unit 4 lowered into the water. At the desired angle tab 26 is released and spring 24 biasing block 19 moves the ends of pin 23 into corresponding notches 28. The forward thrust of propeller 8 is carried by pin 23 in notches 28 to prevent further tilting of the motor in one direction. In tilting the motor forwardly to raise unit 4 and propeller 8 out of water, tab 26 may be depressed to lift pin 23 above notches 28, and pin 23 will also ride over the inclined rear sides of the notches without depressing tab 26.

The slot 29 is provided in the flat upper surface of the portion of drive shaft housing 6 extending rearwardly of the motor 1 immediately beneath bracket 11 as at 30. Slot 29 is circularly formed coincident with the center of steering rotation of motor 1 in bearing surfaces 13 and 14 so that as motor 1 is rotated to a reverse position the lower portion of block 19 enters slot 29 and becomes engaged by housing 6 so as to be secured with pin 23 against movement as would allow motor 1 to tilt forwardly.

Block 19 and housing 6 are arranged so that the motor cannot be turned beyond 90° in either direction without the engagement described to prevent the propeller thrust from tilting the motor forwardly. It is further provided by the invention that in case pin 23 is not fully engaged within corresponding notches 28, the block 19, dislocated as shown in Fig. 8, will interfere with housing 6 so as to prevent the rotation of motor 1 beyond the safety limit. Thus, to preclude accidental failure of the tilt locking device in reverse operation the motor cannot be reversed unless pin 23 is first secured in the corresponding notches 28.

Various embodiments of the invention may be employed within the scope of the accompanying claims.

I claim:

1. In an outboard motor, a swivel bracket having a bearing pivotally supporting the outboard motor for steering, a clamp bracket comprising spaced members having turn screws adapted to secure the clamp bracket to the transom of a boat, a tilt pin extending horizontally and transversely between said members and supporting said swivel bracket thereon and between said members for tilting of the motor and the angular adjustment of the motor respecting the boat transom, each said clamp bracket member having a series of notches forming a ratchet extending in an arc respecting said tilt pin and having forward abutment faces, a moveable locating carried by said swivel bracket and including laterally projecting pins adapted to be disposed in corresponding notches of said bracket members and to engage said faces to secure the motor against tilting downwardly, a lever connected to said moveable locking member and disposed for manual operation to move and hold the pins of said member out of engagement with said notches, and a spring connecting said locking member and said swivel bracket and disposed to bias said pins into said notches upon release of said lever in the selected position of adjustment, said ratchet having cam faces angularly disposed respecting the arc referred to and such as to lift said pins from each corresponding notch to allow raising of the motor on said tilt pin, without manipulation of said lever.

2. In an outboard motor, a swivel bracket having a bearing pivotally supporting the outboard motor for steering and rotation to a reverse position, a clamp bracket comprising spaced members having turn screws adapted to secure the clamp bracket to the transom of a boat, a tilt pin extending horizontally and transversely between said members and supporting said swivel bracket thereon and between said members for tilting of the motor and the angular adjustment of the motor respecting the boat transom, each said clamp bracket member having a series of notches forming a ratchet extending in an arc respecting said tilt pin and having forward abutment faces, a moveable locating member carried by said swivel bracket and including laterally projecting pins adapted to be disposed in corresponding notches of said clamp bracket members and to engage said faces to secure the motor against tilting downwardly, said notches defining cam faces angularly disposed respecting the arc referred to and such as to lift said pins from the notches with raising of the motor on said tilt pin, a lever connected to said moveable locking member and disposed for manual operation to move and hold the pins of said member out of engagement with said notches, a spring connecting said locking member and said swivel bracket and disposed to bias said pins into said notches upon release of said lever in the selected position of adjustment, and a lug carried by the motor and turnable therewith to said reverse position to engage said

locking member and to secure the latter against movement of said pins from said notches and prevent the tilting upwardly of the motor in the reversed position.

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