Aug. 15, 1961 J. C. BANDLI 2,996,273

OUTBOARD MOTOR MOUNTS

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FIG. 2

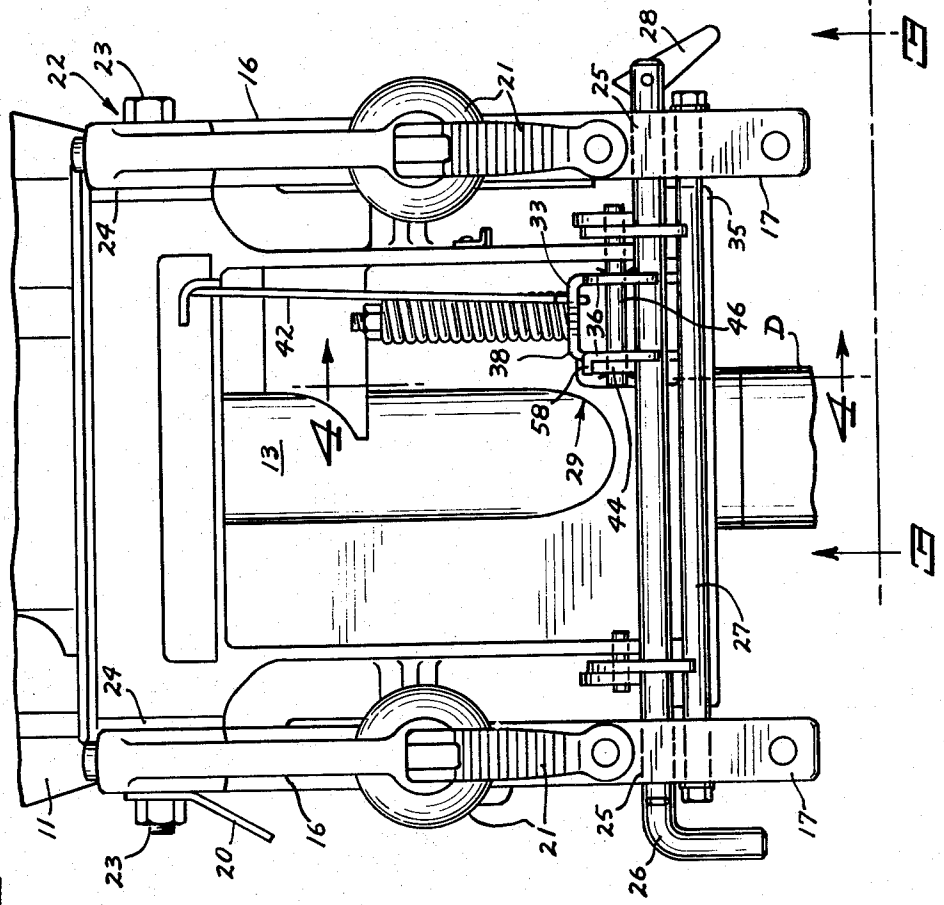
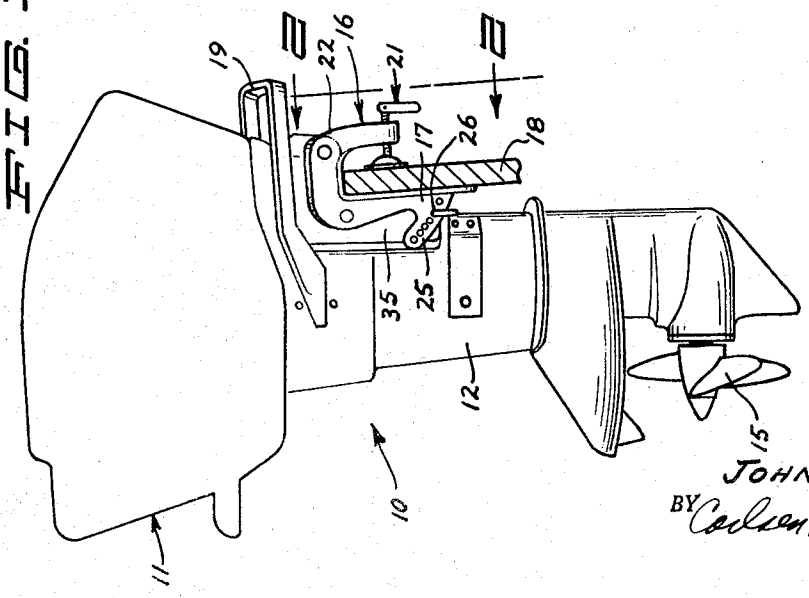


FIG. 1



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FIG. 3

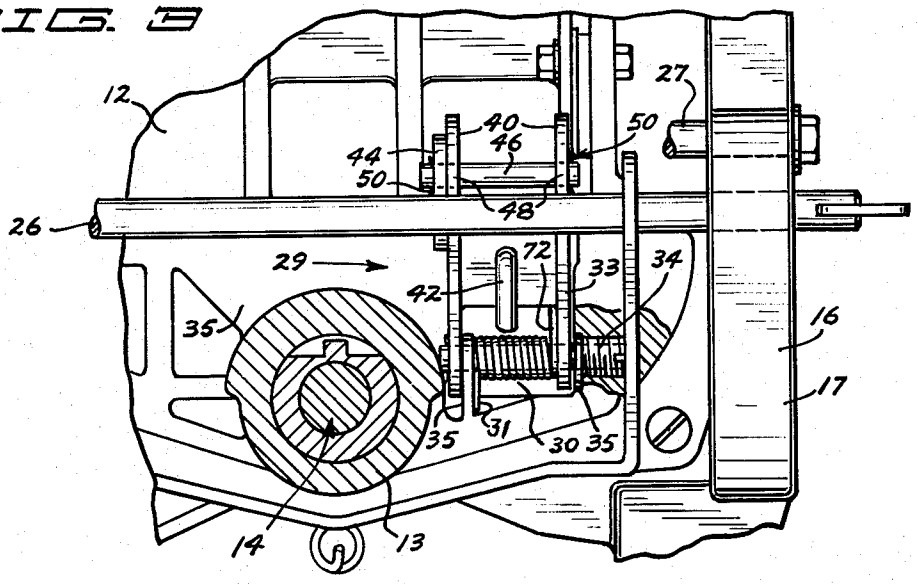


FIG. 4

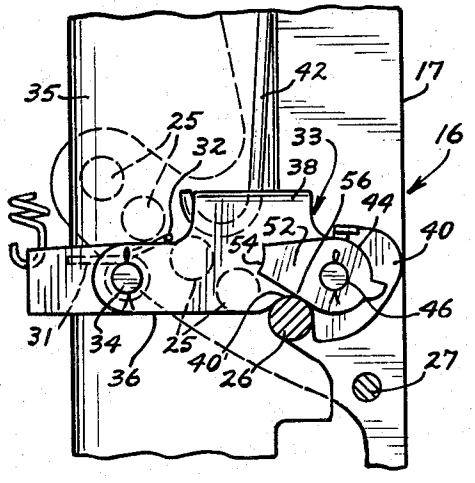
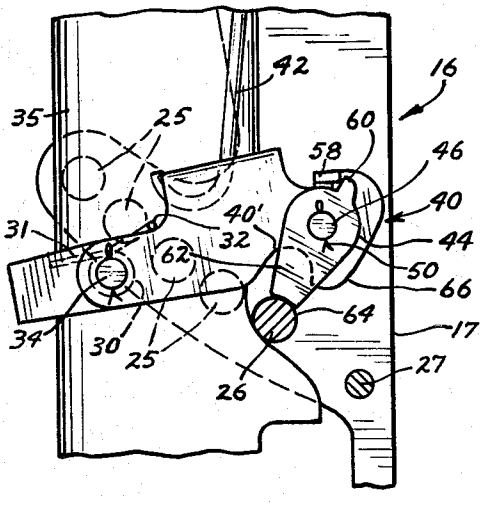


FIG. 5



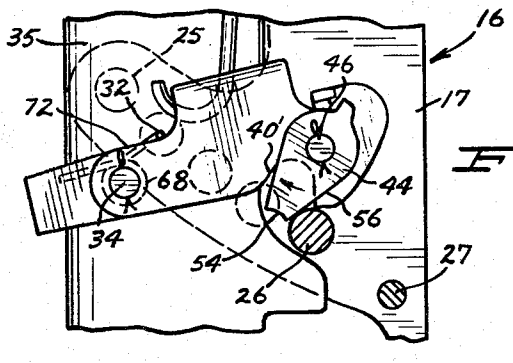


FIG. 6

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2,996,273

OUTBOARD MOTOR MOUNTS

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7 Claims. (Cl. 248—4)

This invention relates to outboard motor mounting devices.

Larger horsepower and heavier outboard motors have created new problems in motor handling. For example, when a motor carrying boat is moved into shallow water or is to be transported over land, it is the usual procedure to tilt the motor from the upright or operating position to a forwardly tilted position with the propeller raised above the boat bottom. This procedure prevents the lowest point of the motor from being damaged as by scraping a lake bottom or the like. Because of the just stated procedure most of the larger outboard motors are mounted on the boat or transom bracket by means of a horizontal pivot, the bracket being fastened to the boat transom for supporting the motor at the rear of the boat. Additionally, locking apparatus may be provided in motors having a reverse operation for preventing the motor from swinging away from the boat transom during reverse operations, i.e., when backing the boat. This locking apparatus is conveniently termed a "reverse lock assembly."

In most cases the reverse lock assembly is spring actuated to the locked position. When it is desired to tilt the motor to the forward tilted or inoperative position, a pull rod attached to the reverse lock assembly is pulled by the operator with one hand to unlock the motor from the bracket while the motor is simultaneously tilted with the other hand. In the larger and heavier motors it is difficult for one person to tilt them when using only hand, therefore it is a purpose of this invention to provide apparatus for keeping the reverse lock assembly unlocked after the pull rod has been released at least when the motor is in the upright position and is to be tilted to the forward tilted position, thereby freeing the operator's hand from the pull rod enabling him to use both hands to forwardly tilt the motor.

Accordingly it is an object of this invention to provide apparatus in an outboard motor with a reverse lock assembly having holding means responsive to the releasing or disengaging relative motion of the reverse lock members to keep them released or disengaged while the motor is in an upright position.

These and other more detailed and specific objects will be disclosed in the course of the following specification, reference being had to the accompanying drawings, in which—

FIG. 1 is a side elevation of a typical outboard motor mounted on a boat transom.

FIG. 2 is an enlarged front elevational view of the motor mount, transom bracket and pivot assembly used in tilting the motor from the upright to the forward tilted position with the motor removed from the boat transom and as taken along line 2—2 of FIG. 1.

FIG. 3 is an enlarged view of the reverse lock assembly shown in the locked position as taken along line 3—3 of FIG. 2.

FIG. 4 is a detailed enlarged side elevational view of the reverse lock assembly when locked and as taken along line 4—4 in FIG. 2 and looking in the direction of the arrows.

FIG. 5 is a side elevational view of the reverse lock assembly as in FIG. 4 in the unlocked or disengaged position with the pawl or keeper preventing relocking thereof.

FIG. 6 is a view as in FIGS. 4 and 5 but showing the pawl position when the motor is being lowered from the forward tilted to the upright position just prior to engagement of the reverse lock assembly.

With reference now to the various views like numbered parts indicate the same part as illustrated in the different views. In FIG. 1 there is shown an outboard motor power unit **10** having an engine housing **11**, a vertical tube housing **12** containing a drive shaft housing **13** (FIG. 2) with drive shaft **14** (FIG. 3), a propeller **15** and a transom or boat bracket **16** having spaced apart lower arms **17** for mounting on transom **18** of a boat (not shown). The power unit **10** may be provided with a handle **19** and a safety chain bracket **20** (FIG. 2). The bracket **16** is removably fastened to transom **18** by the usual fastening means indicated collectively by **21**.

Power unit **10** is rotatably mounted to bracket **16** as at upper end pivot axis **22** by pivot bolt **23** and being separated from bracket **16** by anti-friction washers **24**. Pivot bracket **35** and boat bracket **16** are suitably apertured for receiving pivot bolt **23**. Bracket **20** may be conveniently attached to bracket **16** by bolt **23** as indicated in FIG. 2. Note that the pivot assembly including bolt **23** serves to rigidly hold arms **17** in spaced apart parallel relation.

Arms **17** each have a plurality of oppositely aligned apertures **25** for receiving tilt pin or catch **26**. Pin **26** is inserted in a pair of apertures **25** providing a lower rest for power unit **10** to keep it at a predetermined operating angle with respect to transom **18**. In FIG. 1 it is seen that apertures **25** are generally formed in an arc about pivot **22** for providing various operating angles for different operating conditions.

The lower ends of arms **17** are held rigidly in place by nut and bolt assembly **27** to the rearward of which pin **26** is removably held in a pair of apertures by bar **28** rotatably mounted at one end of pin **26**. The reverse lock assembly **29** hooks over pin or catch **26** for holding power unit **10** in an upright or operating position relative to bracket **16**. Included in assembly **29** is actuator spring **30** rigidly attached to bracket **35** as at **31** and attached to assembly **29** at **32**. Channel shaped reverse lock arms **33** are rotatably mounted on hinge pin **34** of pivot bracket **35**. Arms **33** are formed by spaced apart sides or flanges **36** joined by web **38**. Integrally formed with arms **33** are two hooks or latches **40** having catch or pin receiving notches **40'** adapted to lock with pin or catch **26** as best seen in FIG. 4. When so locked relative movement between bracket **16** and housing **12** is prevented enabling the boat (not shown) to be backed with power unit **10** remaining in the upright or operating position.

As seen in FIG. 4 spring **30** downwardly urges channel arms **33** to rotate clockwise, thereby urging hooks or latches **40** into engaging position with catch pin **26**. To release latches **40** from catch **26** pull rod **42** is manually urged upwardly as seen in FIGS. 2 and 4 thereby rotating channel arm **33** counterclockwise about pin **34**. When so rotated power unit **10** is freed for pivoting about axis **22** to the forward tilted position with propeller **15** in a raised position.

It is remembered that spring **30** urges latches **40** into locking engagement with pin or catch **26**, therefore when the operator (not shown) removes his hand from the pull rod **42** power unit **10** is automatically relocked to bracket **16**. It is apparent then that the operator must keep the assembly **29** and locking members **26** and **40** disengaged while initially tilting the motor away from transom **18**.

To facilitate tilting or pivoting of outboard motors to the forward tilted position and provide automatic relocking of power unit **10** to bracket **16** when returned to the

upright position pawl 44 is eccentrically and rotatably mounted on pin 46 disposed in opposing apertures 48 of hooks 40 and held axially in place by cotter pins 50. The center of gravity 52 is located between pin 46 and tilt pin engaging end 54. In the reverse locked position as seen in FIG. 4 pawl lower side 56 is resting on tilt pin 26. As pull rod 42 is moved upwardly pawl 44 rotates counterclockwise as seen in FIG. 5, the amount of rotation being limited by dog 58 on one of hooks 40 engaging pawl detent 60. Upon release of rod 42 spring 30 urges assembly 29 clockwise about pin 34 moving tilt pin engaging end 54 operatively and endwise against tilt pin 26 as seen in FIG. 5.

Dog 58 engages the pawl 44 ensuring the pawl end 54 engages the pin 26 by limiting pawl rotation such that the side 62 is prevented from engaging pin 26 as at 64 for rotating the pawl out of operative engagement therewith. As power unit 10 is tilted upwardly as seen in FIG. 1 the pivot bracket 35 moves in a first direction to the left as viewed in FIGS. 4–6. When so moved pawl detent 60 engages dog 58 while end 54 is still operatively slidably engaging tilt pin or catch 26 for preventing further rotation of pawl 44.

As leftward movement of latch 40 is continued end 54 is disengaged from catch 26 and latches 40 non-operatively engage catch or pin 26 as at 66 permitting continued pivoting of power unit 10. The usual locking means for keeping the power unit in the forwardly tilted position may be provided, but since it is not a part of this invention description thereof is dispensed with.

Upon returning power unit 10 to the upright position pawl lower side 56 engages catch or pin 26 and moves to the right (FIGS. 4–6) rotating pawl 44 clockwise about pin 46 keeping end 54 away from catch 26. Spring 30 urges hooks or latches 40 downwardly into locking engagement with pin 26 as the latches slide over the pin 26 as best seen in FIG. 6.

It is understood that suitable modifications may be made in the structure as disclosed, provided such modifications come within the spirit and scope of the appended claims. Having now therefore fully illustrated and described my invention, what I claim to be new and desire to protect by Letters Patent is:

1. In an outboard motor having a boat bracket and a power unit vertically rotatably mounted thereon and rotatable between an upright and a tilted position, the improvement comprising a lock for releasably non-rotatably holding the unit to the bracket, the lock consisting of two relatively movable separable lockingly engaged members respectively connected to the unit and the bracket, one of said members including a keeper having an orienting portion for positioning said keeper in a position to maintain said members separated when the power unit is in an unlocked upright position and responsive to power unit rotation toward tilted position to permit said relatively movable members to become lockingly engaged when said power unit is moved from its tilted position to a locked upright position on said bracket.

2. In an outboard motor, a mounting bracket member, a power unit member pivoted to the bracket member for tilting movement about a horizontal axis between an upright and a tilted position, a locking device comprising a latch movably mounted on one member, a catch on the other member, spring means engaging the latch to bias it into locking engagement with the catch to lock the power unit member in upright position, a control for moving the latch to a catch releasing position, and a keeper mounted on the device and including means positioning the keeper between the latch and catch in response to movement of the latch to a releasing position and to thereby movably retain said latch in releasing position against bias of the spring means while the power unit member is in upright position, said keeper means maintaining said keeper in a position to permit locking engagement between said latch and catch when the power unit member is moved from a tilted to an upright position.

3. In an outboard motor having a boat bracket carrying a transverse tilt pin, a power unit at the rear of the bracket and pivoted thereto above the tilt pin, said unit carrying a latch having its rear end pivoted to the unit and its forward end hooking over the tilt pin prohibiting tilting of the unit about the bracket, the improvement comprising a pawl pivotably mounted on the hook portion of the latch such that when the latch is hooked over the pin the pawl rests upon the tilt pin in a rearwardly raised position and when the latch is raised the pawl is adapted to fall into operative engagement with the tilt pin for releasably supporting the latch away from the pin, said pawl including means orienting the same to a position to maintain the latch and pin separated and permitting engagement of said pawl by said pin to permit re-engagement between said latch and pin when the power unit is moved from a tilted position to an upright position.

4. The subject matter of claim 3 wherein said last mentioned means comprises a dog on said forward end for engaging the pawl to limit rotation thereof.

5. In an outboard motor, a boat bracket having an upper and a lower end, a power unit having a vertical housing and being rotatably supported about a horizontal axis on the bracket upper end, a hook and a tilt pin respectively supported by said housing and bracket lower end, the hook engaging the pin for non-rotatably connecting the housing to the bracket, a pawl having an engaging end, a lower side, a detent and being rotatably supported by the hook with its center of gravity being between the engaging end and the hook support, the pawl lower side resting on the pin with the center of gravity rearward of the hook support when the hook is engaging the pin, means for momentarily raising the hook out of engagement with the pin, the pawl engaging end moving downwardly during the momentary raising to operatively engage the pin for preventing reengagement of the hook therewith, a dog on the hook engaging the pawl detent for limiting rotation of the pawl and maintaining the operative engagement thereof with the pin during limited rotation of the power unit away from the bracket and being freed from the pin upon further of such rotation, and upon rotation of the unit toward the bracket the pawl lower side engages the pin for returning the pawl to the rearward position as the hook reengages the pin.

6. In an outboard motor having a boat bracket carrying a transverse tilt pin, a power unit pivoted to the bracket about a horizontal axis, the unit pivotably carrying a latch having one end hooked over the tilt pin for securing the unit adjacent the bracket in an upright position, the improvement comprising a pawl pivotably mounted on the one end such that when the pin and latch are interengaged the pawl pivot is on the bracket side of the pin with the pawl resting thereon in a raised position whereby as the latch is raised the pawl pivots downwardly to slidably engage the pin, and the unit being pivotable about its axis away from the upright position when the pawl is engaging the pin such that the pawl is freed therefrom, said pawl including means orienting said pawl to a position to engage said pin and maintain the latch separated from said pin and permitting said latch to lockingly re-engage said pin.

7. In an outboard motor having a power unit member pivotably mounted on a bracket member, a lock comprising lockingly inter-engaged catch and latch means respectively mounted on the members remote from said pivot for non-rotatably securing the members together, lever means in the motor and being operatively connected to the lock for momentarily disengaging the means to permit relative pivoting between the members in a first direction whereby the means are freed from each other, a pawl eccentrically and pivotably mounted on one of the means about a pivot axis disposed adjacent to and slightly away from the other means opposite to the first

direction whereby as the means are disengaged the pawl downwardly pivots to engage the other means for keeping same disengaged, and the pawl including orienting mean normally disposing the pawl downwardly pivoted below the one means to maintain said catch and latch members separated and to permit reengagement thereof.

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