

[54] **ATTACHMENT FOR CONNECTING A STERN DRIVE UNIT AND AN AUXILIARY OUTBOARD MOTOR**

[76] Inventor: **Homer G. Nordling**, 5 Oconto Ct., Madison, Wis.

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[58] Field of Search **115/18 A, 18; 74/480 B, 527; 287/58 CT**

[56] **References Cited**

UNITED STATES PATENTS

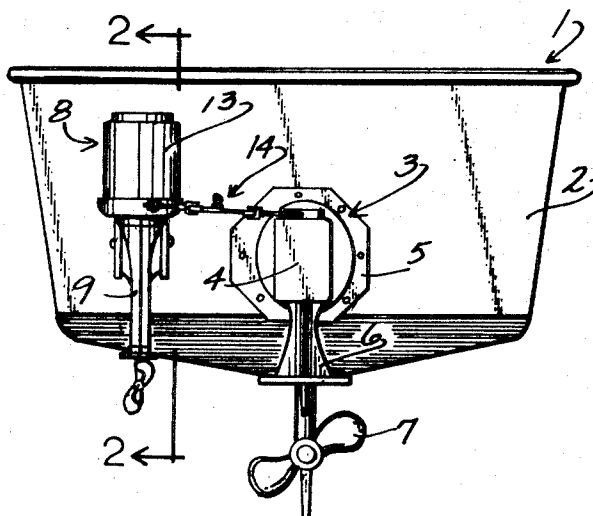
2,895,445	7/1959	Foraker.....	115/18 R
2,899,833	8/1959	Prier	115/18 R
3,177,976	4/1965	Wenzel.....	287/58 CT

Primary Examiner—Milton Buchler
Assistant Examiner—E. R. Kazenske
Attorney—Andrus, Scales, Starke & Sawall

[57] **ABSTRACT**

A marine steering attachment for connecting an auxiliary propulsion unit, such as an outboard motor, and a main propulsion unit, such as a stern drive. A small outboard motor is mounted on the transom of a boat alongside a stern drive unit and is used as an auxiliary power source for trolling or for operation in shallow water. The outboard motor is connected to the stern drive unit in a manner such that either the outboard motor or the stern drive unit can be tilted with respect to the other, and when the outboard motor is in the lowered or operating position, it is rigidly connected to the stern drive unit so that it will steer with steering control from the main helm station of the boat.

6 Claims, 5 Drawing Figures



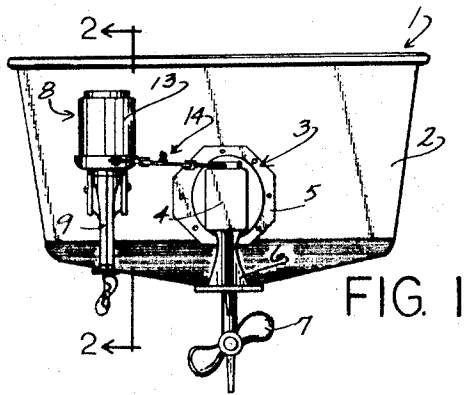


FIG. 1

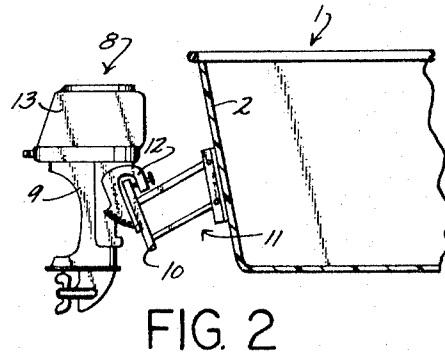


FIG. 2

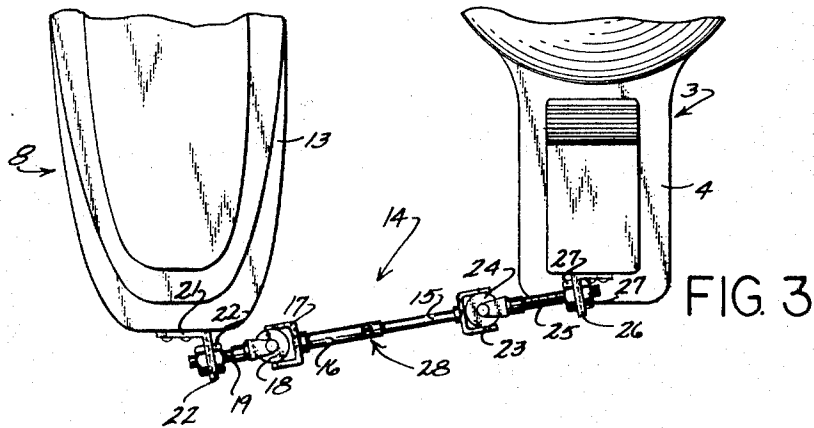


FIG. 3

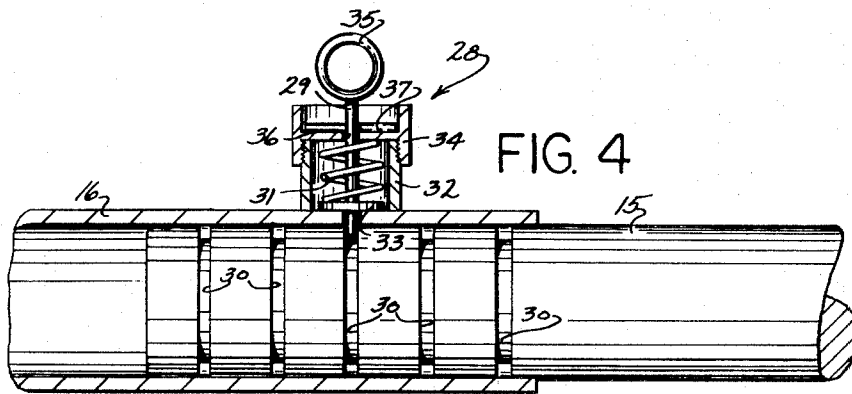


FIG. 4

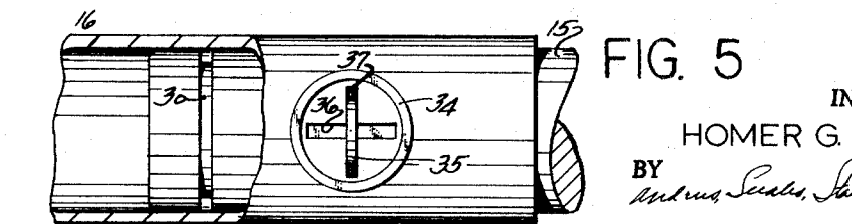


FIG. 5

INVENTOR.

HOMER G. NORDLING

BY *Andrew Seals, Stuart & Seals*

ATTORNEYS

ATTACHMENT FOR CONNECTING A STERN DRIVE UNIT AND AN AUXILIARY OUTBOARD MOTOR

BACKGROUND OF THE INVENTION

It is often desired to utilize a small outboard motor as an auxiliary drive for a stern drive boat. Stern drive boats of V-hull or tri-hull design have a deep draft so that their operation in shallow water is limited. Thus, a small outboard motor can be used as an auxiliary power source for operation in shallow water areas for docking, mooring or fishing purposes, or the auxiliary outboard motor can be used for trolling at slow speeds. The use of a small outboard motor also provides an increased measure of safety in that it can function as an auxiliary drive in the event of failure of operation of the stern drive unit.

The auxiliary outboard motor is normally mounted on a transom bracket attached to the transom of the boat, and as the stern drive boats have a relatively deep transom it is very difficult to reach over the transom to operate or steer the outboard. Therefore, it is desirable to provide a steering attachment for steering the outboard motor from the stern drive unit so that the outboard motor can be steered from the helm of the boat.

SUMMARY OF THE INVENTION

The invention relates to a steering attachment for connecting a small auxiliary outboard motor to a stern drive unit which permits both the outboard motor and the stern drive unit to be independently raised and lowered, and enables the outboard motor to be steered from the stern drive unit when the outboard motor is lowered and the stern drive unit is in the raised non-operating position. According to the invention, the auxiliary outboard motor is mounted on a transom bracket alongside the stern drive unit and the outboard motor is connected to the stern drive unit by an adjustable connecting mechanism. The connecting mechanism includes a pair of telescopic or extendible members, each of which is connected through a universal connection to the outboard motor and stern drive unit, respectively. A locking mechanism is utilized to lock the telescopic members in any desired position and provide a rigid connection between the outboard motor and the stern drive unit.

The locking mechanism includes a pin that extends through an opening in the outer telescopic member and is adapted to engage one of a series of grooves in the inner telescopic member. The pin is biased to an engaged position in which the inner end of the pin is engaged with one of the grooves. The pin can be manually or mechanically released to permit free telescopic movement between the telescopic members, and a provision is included to hold the locking pin in the released position.

When the auxiliary outboard motor is not in use, the locking pin is released to permit the telescopic members of the steering mechanism to move freely relative to each other. To use the outboard motor, the stern drive unit is tilted up to the inoperative position and the outboard motor is tilted down to the operative position. The locking pin is then moved to the engaged position to provide a rigid connection between the outboard motor and the stern drive unit and permit the outboard motor to steer in accordance with the steering movement of the stern drive unit.

The steering attachment of the invention provides a connection between the outboard motor and the stern drive unit which permits either the outboard motor or the stern drive unit to be independently raised or lowered when the locking mechanism is released and provides a rigid steering connection between the units when the locking mechanism is engaged. The unit is adjustable so that it will fit most size installations without alteration.

As an added feature, a safety release is incorporated to automatically release the locking mechanism in the event the outboard motor strikes an underwater obstruction, to thereby permit the outboard motor to tilt upwardly. The safety provision is provided by fabricating the locking pin of a softer metal than the telescopic members so that the pin will shear in the event the lower unit of the outboard motor strikes a submerged object.

Other objects and advantages will appear in the course of the following description.

The drawings illustrate the best mode presently contemplated of carrying out the invention.

In the drawings:

FIG. 1 is a rear view of a boat incorporating the steering attachment of the invention;

FIG. 2 is a vertical section taken along line 2—2 of FIG. 1 and showing the attachment of the outboard motor to the transom of a boat;

FIG. 3 is a fragmentary enlarged plan view showing the steering attachment connecting the outboard motor and the stern drive unit;

FIG. 4 is a fragmentary enlarged section of the steering attachment; and

FIG. 5 is a plan view with parts broken away showing the steering attachment of FIG. 4.

The drawings illustrate a boat 1 having a transom 2 and a stern drive unit 3 mounted on the transom. The stern drive unit 3 includes a drive shaft housing 4 which is attached to the transom 2 by means of a transom mounting plate 5 and a lower unit 6 is attached to the housing 4 and includes a propeller 7.

The stern drive unit 3 is a conventional type in which the propulsion unit is located on the exterior of the transom and the engine is located within the hull of the boat. The propulsion unit, including the drive shaft housing 4 and lower unit 6, can be pivoted about a horizontal axis from a lowered operating position, as shown in FIG. 1, to an inclined position in which the propeller is located out of the water. The propulsion unit is also adjusted to pivot about a vertical axis, and can be pivoted about the vertical axis to provide steering control by a conventional remote control steering mechanism operated from the helm of the boat.

Located alongside of the stern drive unit 3 is a conventional small outboard motor 8. The outboard motor is a conventional type and includes a drive shaft housing 9 which is connected to an inclined plate 10 of a motor bracket 11 by clamps 12. A cowl 13 is connected to the upper end of the drive shaft housing 9. As in the case of the stern drive unit 3, the outboard motor can be tilted or pivoted between a vertical operating position and an inclined position where the propeller is out of the water.

According to the invention, the stern drive unit 3 is connected to the outboard motor 8 by an adjustable connecting unit, indicated generally by 14. The connecting unit 14 includes an inner telescopic member 15

and an outer telescopic member 16 which are slidable relative to each other. The outer end of member 16 is connected to a yoke 17, and the yoke is connected through a conventional universal coupling 18 to the end of a threaded shaft 19. Shaft 19 extends through the outwardly extending flange 20 of angle bracket 21 and is secured to the flange by nuts 22. The other flange of the bracket 21 is secured to the cowl 13 of the outboard motor 8.

The inner telescopic member 15 is similarly attached to the drive shaft housing 4 of the stern drive unit 3. In this regard, the outer end of the member 15 carries a yoke 23 which is connected through a universal coupling 24 to the end of a threaded shaft 25. The shaft 25 extends through an opening in the outwardly extending flange of the angle bracket 26 and is secured to the flange by nuts 27. The opposite flange of the bracket 26 is secured to the housing 4 of the stern drive unit 3.

The telescopic members 15 and 16, in conjunction with the universal couplings 18 and 24, permit the outboard motor 8 and stern drive unit 3 to be independently raised or lowered as desired.

To lock the telescopic members 15 and 16 against relative axial movement and provide a rigid connection between the stern drive unit 3 and the outboard motor 8, a locking mechanism 28 is employed. Locking mechanism 28 includes a pin 29 which extends through an opening in the outer telescopic member 16 and is received within one of a series of spaced grooves 30 formed in the outer surface of the inner member 15.

The locking pin 29 is biased to a locking position within one of the grooves 30 by a coil spring 31 which is located within a housing 32 that is welded to the outer surface of the telescopic member 16. The inner end of the spring 31 bears against a disc 33 secured to the locking pin while the outer end of the spring bears against a cap 34 threaded on the outer end of the housing 32. Thus, the force of the spring acts against the disc 33 to urge the locking pin 29 into engagement with one of the grooves 30.

The locking pin can be released by manually pulling outwardly on the looped end 35 of the pin 29 which draws the inner end of the pin out of engagement with the groove 30 against the force of spring 31. With the locking pin disengaged, the telescopic members 15 and 16 can be moved relative to each other to extend or contract the length of the connecting unit.

To hold or maintain the locking pin 29 in the released position, the cap 34 is provided with a groove or slot 36 and a second cross member 37 is secured to the outer end of the pin beneath the loop 35. When the cross member 37 is in alignment with the slot 36, the locking pin 29 can be urged inwardly by the spring to a position where it will engage one of the grooves 30. However, by rotating the pin 29 to a position where the cross member 37 is out of alignment with the slot 36, the cross member 37 will then bear against the upper surface of the cap 34 and will prevent the pin 29 from engaging one of the grooves 30.

As shown in FIG. 1, the connecting unit 14 is located a substantial distance beneath the upper end of the transom 2, and the looped end 35 provides a means to engage the pin 29 with a hook or other implement so that the pin 29 can be conveniently released or engaged without the necessity for the operator to bend downwardly over the transom.

In normal operation with the stern drive unit in the lowered position, the outboard motor 8 is usually tilted upwardly so that it is out of the water. In this position the locking pin is removed from engagement with the grooves 30 so that there is free sliding movement between the members 15 and 16.

When trolling or in shallow water where the draft of the stern drive unit is too great for the water depth, the outboard motor 8 can be lowered and the stern drive unit 3 tilted upwardly. With the outboard motor 8 in the operating position, the locking pin 29 can then be engaged in one of the grooves 30 provide a rigid connection between the stern drive unit and the outboard motor 8. Thus, as the stern drive unit is steered, the fixed connection will correspondingly steer the outboard motor. The grooves 30 permit relative rotation between the telescopic members 15 and 16 during steering movement.

A safety feature is incorporated in the unit by fabricating the locking pin 29 out of a metal or material which is not as hard as that of the outer telescopic member 16. The locking pin 29 thereby functions as a shear pin and if the outboard motor 8 should hit an underwater obstruction, tending to kick the outboard upwardly, the pin 29 will fracture to permit this kick up without damage to either the outboard motor or the stern drive unit.

The safety feature can also come into play in the event the stern drive unit 3 is accidentally tilted while the outboard motor is down and the locking pin 29 is in engagement. Accidental tilting of the stern drive unit 3 by a power tilt mechanism will act to shear the pin 29 to prevent damage to either the outboard motor or the stern drive unit if the tilting were to move the outboard motor beyond its steering radius.

The steering attachment of the invention can be readily engaged or disengaged without the necessity for detaching or disassembling any of the operating parts. Moreover, the unit is adjustable through the use of the multiple grooves 30 so that it will fit various sized installations without any alteration.

While the drawings illustrate the locking pin 29 to be engaged and disengaged through manual operation, it is contemplated that the pin can be power actuated by remote control.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

I claim:

1. In combination with a boat having a transom, a stern drive unit mounted on the transom and disposed to pivot about a horizontal axis between a lower operating position and an upper tilted non-operating position, an outboard motor mounted on the transom and disposed to pivot about a second horizontal axis between an upright operating position and a tilted non-operating position, a pair of telescopic members, a universal coupling connecting the outer end of each telescopic member to the outboard motor and stern drive unit respectively, a locking member connected to one of said telescopic members, a series of axially spaced locking elements associated with the other of said telescopic members and disposed to be selectively engaged by said locking member to thereby prevent relative axial movement between said telescopic members and permit the outboard motor to steer in accordance with the

steering control of said stern drive unit, and means connected to the outer end of said locking member and configured to be engaged by a hook for manually moving said locking member between an engaged and disengaged position.

2. The combination of claim 1, and including resilient means for biasing the locking member to the engaged position.

3. The combination of claim 1, wherein said locking member is a radially extending pin, and said combination includes means responsive to a predetermined degree of rotation of said pin about its axis for holding the pin in the disengaged position and preventing said resilient means from biasing said pin to the engaged position.

4. The combination of claim 3, wherein said pin is provided with an outwardly extending projection, and an abutment on said outer telescopic member and disposed to be engaged by the projection on said pin when the pin is rotated to said predetermined degree to thereby restrict inward movement of the pin to the engaged position.

5. The combination of claim 1, wherein said locking member is a radially extending pin and said outer telescopic member is provided with a hole to receive said pin, said locking elements being associated with said inner telescopic member, said pin being formed of a softer material than said telescopic members whereby the pin will shear when the telescopic members are subjected to excessive stress.

6. In combination with a boat having a transom, a stern drive unit having a steering control and mounted

through the transom and disposed to pivot about a horizontal axis between a lower operating position and an upper tilted non-operating position, an outboard motor mounted on the transom and disposed to pivot about a second horizontal axis between an upright operating position and a raised non-operating position, a pair of telescopic members located outboard of said transom and disposed concentrically for sliding movement with respect to each other, first universal coupling means connecting one of said telescopic members to the outboard motor to permit universal movement between said first telescopic member and said outboard motor, second universal coupling means for connecting the other telescopic member to the stern drive unit to permit universal movement between said second telescopic member and the stern drive unit, and locking means for selectively locking the telescopic members against relative sliding movement between said telescopic members when the stern drive unit is in the tilted non-operating position and the outboard motor is in the operating position so that the outboard motor will be steered in accordance with the steering control of the stern drive unit, and said locking means to be released to permit free sliding movement between said telescopic members when the stern drive unit is in the operating position and the outboard motor is in the raised non-operating position, said locking means including a manually operable locking member projecting through the outer of said telescopic members and engageable with the inner of said telescopic members.

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