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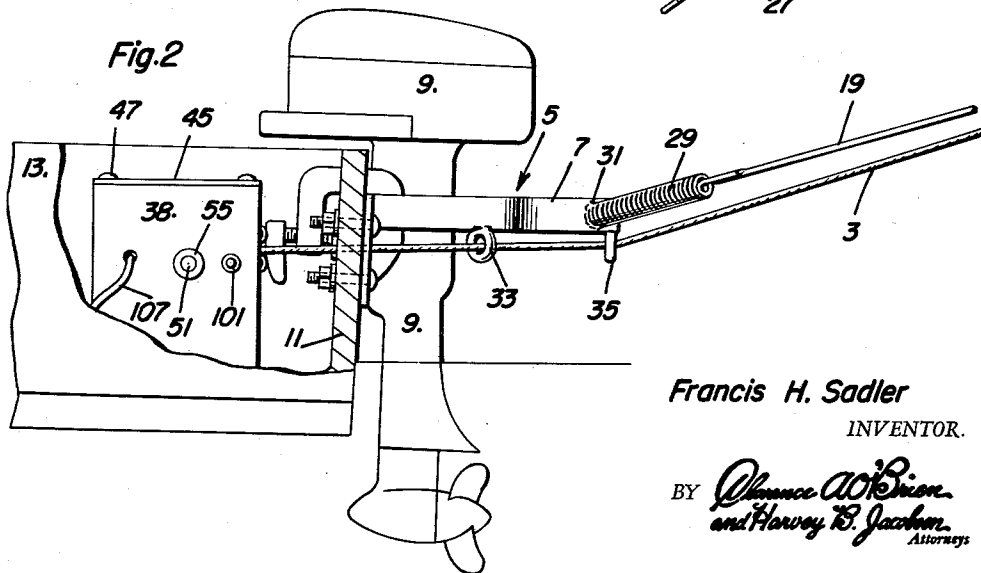
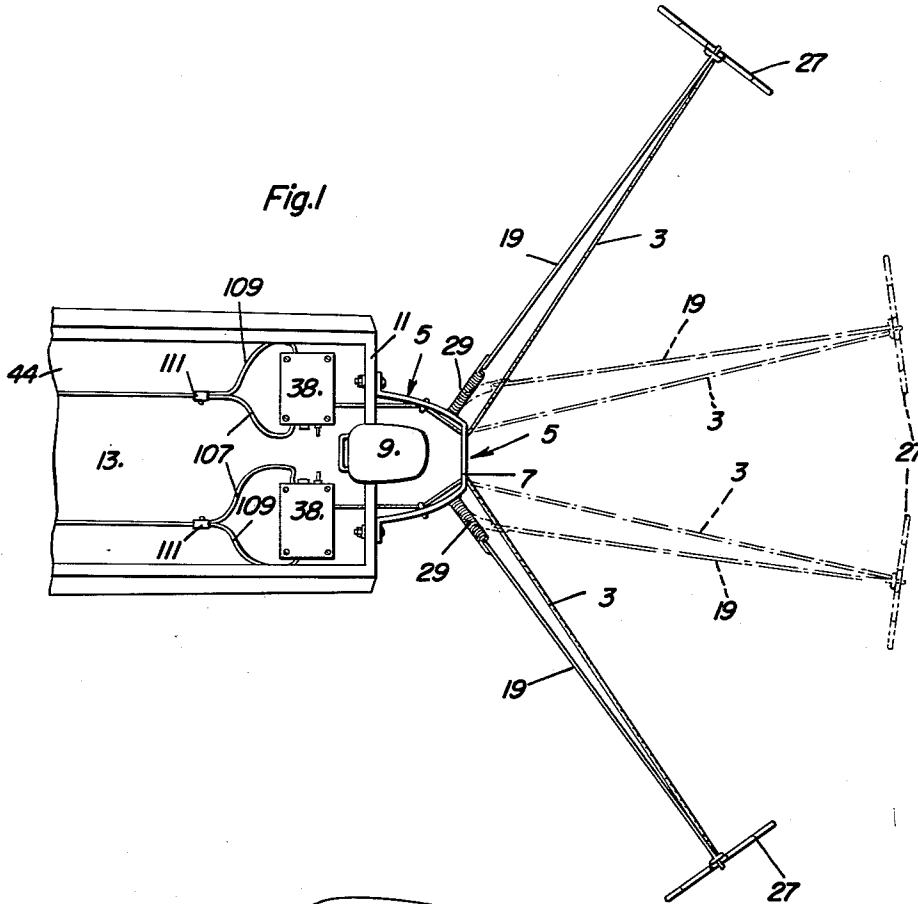
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WINDUP AND SUPPORT MEANS FOR WATER SKI TOW ROPE

Filed Nov. 4, 1958

2 Sheets-Sheet 1



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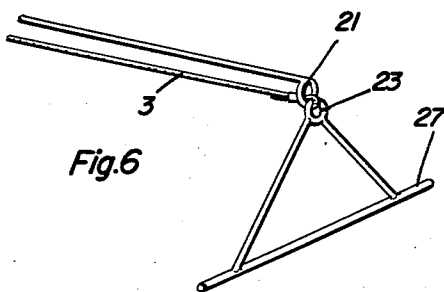
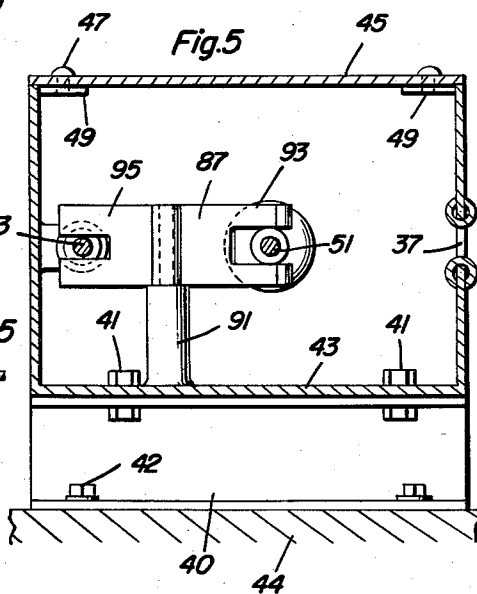
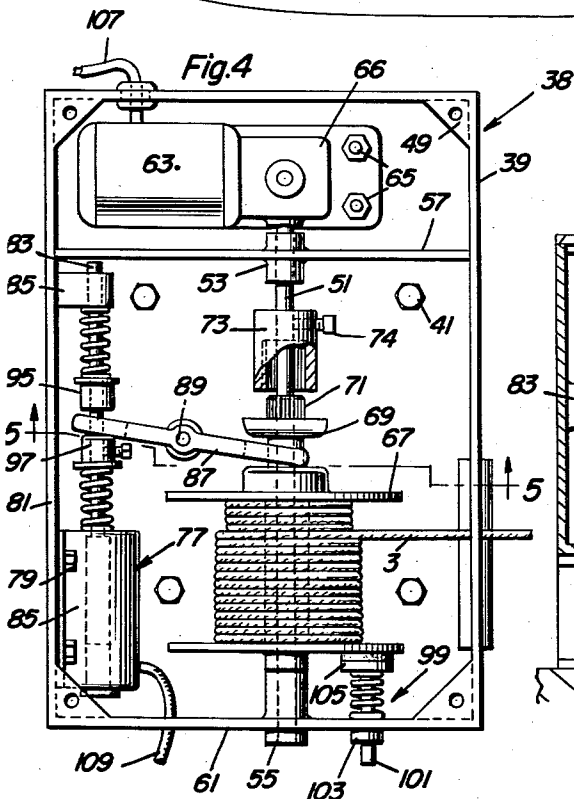
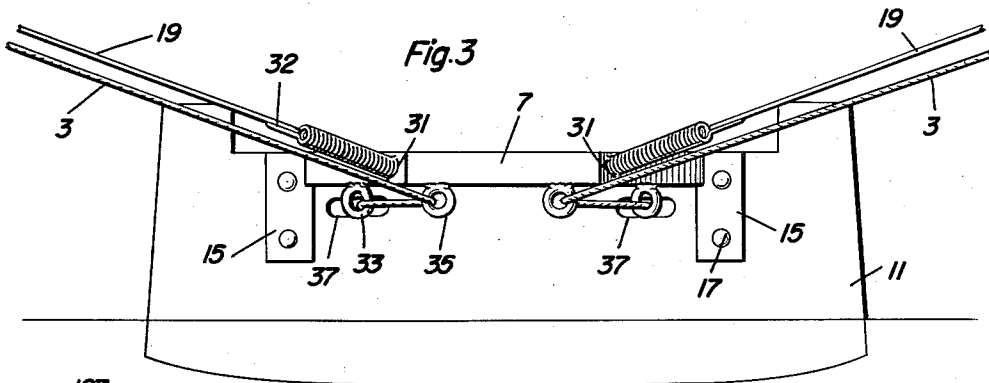
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WINDUP AND SUPPORT MEANS FOR WATER SKI TOW ROPE

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2 Sheets-Sheet 2



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1

3,043,259  
**WINDUP AND SUPPORT MEANS FOR  
 WATER SKI TOW ROPES**  
 Francis H. Sadler, Cabery, Ill.  
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 7 Claims. (Cl. 114-235)

This invention relates to improvements in windup and support means for attachment to an outboard motor boat for supporting and winding up and unwinding water ski tow ropes.

The primary object of the invention is to provide support means for a pair of such tow ropes attachable to the transom of an outboard motor boat to hold a pair of such tow ropes up out of the water for a substantial distance behind the boat and at opposite sides of the motor to prevent the tow ropes from fouling the motor, or its propeller, together with windup mechanisms in the boat for the tow ropes, respectively, operatively concurrently or separately to windup the tow ropes when not in use singly or simultaneously and to similarly unwind said ropes.

Another object is to provide in such supports, a pair of tow rope support rods provided with guides for guiding the tow ropes to the windup mechanisms, the support being attachable to the boat to locate the support rods at opposite sides of the motor and its propeller and the rods normally diverging rearwardly relatively and inclining upwardly and rearwardly of the boat and being resiliently mounted to hold the tow ropes out of the water from a substantial distance from the stern of the boat and for flexing to swing vertically or laterally to reduce wear on the tow ropes during winding up or unwinding by skiers pulling on the same and traveling in widely separated zigzag paths and moving up and down on waves.

Still another object is to provide windup mechanisms for the tow ropes in the form of motor operated reels operative under control of solenoid operated clutches, and brake means for the reels to prevent overrunning of the reels during unwinding of the tow ropes by pull thereon by skiers grasping the usual handle bars of the tow ropes.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a fragmentary top plan view of the invention;

FIGURE 2 is an enlarged fragmentary view in side elevation partly broken away and shown in section;

FIGURE 3 is an enlarged view in rear elevation of the support means attached to the transom of a boat;

FIGURE 4 is an enlarged top plan view of one of the windup mechanisms of the windup means with the top plate removed;

FIGURE 5 is a view in vertical transverse section taken on the line 5-5 of FIGURE 4 with the top plate in place, and

FIGURE 6 is an enlarged fragmentary view of one of the support rods and the tow rope supported thereby with the handle bar on the tow rope.

Referring to the drawings by numeral, according to this invention, windup and support means for a pair of water ski tow ropes 3 is provided comprising a tow rope support 5 including a U-shaped attaching bracket 7 of a size to straddle an outboard motor 9 on the transom 11 of a boat 13. Means is provided for attaching the bracket 7 to the transom 11 in rearwardly extending, substantially horizontal position, and astride the outboard motor 9 comprising a pair of terminal apertured plates 15 de-

2

pending from said bracket 7 for bolting as at 17 to the transom 11.

The support 5 further includes a pair of tow rope support rods 19 normally diverging relatively rearwardly from opposite sides of the bracket 7 and the motor 9, and which incline upwardly at an approximate angle of 30° with outer end eyes 21 thereon and whereby a pair of water ski tow ropes 3 train rearwardly through said eyes 21 and attached, as at 23, to eyes 25 on the usual tow rope handle bars 27 are held upwardly out of the water at points remote from the boat 13 and by the outer ends of said rods 19.

A pair of helical springs 29 are terminally welded, as at 31, to opposite sides of the bracket 7 and to the inner ends of the support rods 19, as at 32 and form yielding connections between said rods 19 and the bracket 7. It is to be understood that the springs 29 are substantially aligned with the support rods 19 normally and are sufficiently stiff to normally hold the support rods 19 in the above described positions but will flex so as to prevent breaking of the support rods by pull of the tow ropes 3, and for lateral and vertical swinging of the support rods 19 to reduce wear on the tow ropes 3 during unwinding by skiers pulling thereon and traveling in widely separated zigzag paths and moving up and down on waves.

Pairs of front and rear spaced guide eyes 33, 35 spaced apart in the pairs longitudinally of the tow ropes 3 depend from opposite sides of the bracket 7 and through which and a pair of horizontal slots 37 in the transom 11 the tow ropes 3 are trained to windup means comprising a pair of windup mechanisms 38 for said ropes, respectively, and which are located on the bottom 44 and in the stern of the boat 13 opposite each other at opposite sides of the boat, and will now be described.

The windup mechanisms 38 are duplicates of each other and each comprises a rectangular housing 39 fixed by bolts 41 in its bottom 43 to channel supports 40, bolted as at 42, to the bottom 44 of the boat 11, the housing having a removable top plate 45 bolted, as at 47, to corner flanges 49 in the housing 39. A reel drive shaft 51 extends in each housing 39 and is journaled transversely of the boat 11 in bearings 53, 55 on a partition 57 in the housing 39 and on one end 61 of said housing.

An electric motor 63 in each housing 39 on one side of the partition 57 is secured therein by bolts 65 and is operatively connected to the drive shaft 51 by any conventional gearing, not shown, in a gear box 66 on the motor 63.

On the other side of the partition 57 of each housing 39 a windup reel 67 is freely rotatable and longitudinally slidable in opposite directions on the drive shaft 51, for a purpose presently apparent, and is provided with a circumferentially grooved axial collar 69 fast on one end thereof and terminating in an externally splined axial male clutch sleeve 71, the collar 69 and clutch sleeve 71 being freely rotatable on the drive shaft 51 by the reel 67 and slidable with the reel 67 in opposite directions, respectively. In one direction of sliding movement of the reel 67, collar 69 and male clutch sleeve 71, said male clutch sleeve 71 is engaged with an internally splined female clutch sleeve 73 fixed by a set bolt 74 on the drive shaft 51, whereby the reel is driven for winding the related tow rope free thereon, whereas, in the other direction of sliding movement of the reel 67, collar 69 and clutch sleeve 71, the male clutch sleeve 71 is withdrawn out of and disengaged from the female clutch sleeve 73 and the reel 67 is free to idly rotate on its drive shaft 51 for unwinding of the tow rope therefrom. As shown in connection with one tow rope 3, said tow ropes are extended from the eye guides 33 through suitable slots 37, in the housing 38 to a related reel 67 for winding thereon and unwind-

ing therefrom, said ropes being each suitably connected to its related reel 67.

The collar 69 of each windup mechanism 38 forms part of a clutch shifter means for the mechanism further comprising a solenoid 77, bolted as at 79, to one side 81 of the housing 39, and having the core 83 thereof extensible outwardly of the casing 85 of the solenoid 77 parallel with the reel drive shaft 51 for projection and retraction and sliding in a bearing on said side 81 remote from the solenoid casing 85.

A horizontal clutch shifter lever 87 is pivoted intermediate its ends, as at 89 on a post 91 on the housing bottom 43 with notched ends 93, 95 engaged with the groove in the collar 69 and straddling the core 83 respectively for swinging in opposite directions respectively to slide the reels 67, 69 and male clutch sleeve 71, as a unit in opposite directions for engaging the male clutch sleeve 71 and the female clutch sleeve 73 and disengaging the same respectively, for driving and idling of the reel 69. A spring loaded set collar 97 on the core 83 bearing against one side of the shifter lever 87 swing said lever in one direction in response to retraction of the core 83. A spring loaded set collar 97 on the core 83 engaging the opposite side of the shifter lever 87 acts to advance the core 83 and to swing said shifter lever 87 in the opposite direction.

A friction brake 99 retards idling unwinding rotation of the reel 67 of each windup mechanism 38 and comprises a spring loaded plunger 101 slidable in a boss 103 on the end 61 of the housing 39 with an enlarged friction gripping head 105 engaged by one end of the reel 67 in response to sliding of the reel 67 and its collar 69 and sleeve 71 to disengage the male collar 71 from the female collar 73. Thus the reel 67 is prevented from overrunning when unwinding the tow rope 3 therefrom.

It will be noted that the front eyes 35 on the bracket 7 are offset to one side of the springs 29 and the support rods 19 in the normal position of said rods so that when each tow rope 3 is wound up on its related reel 67 until the handle bar 27 on the tow rope 3 abuts the eye 21 on the rear end of the support rod 19, the support rods 19 will be pulled by said ropes in response to further winding thereof to swing the support rods 19 from diverging relation in which they extend beyond the sides of the boat, toward each other behind the boat. Thus said support rods 19 will be pulled toward each other and from positions in which they extend outwardly beyond the sides of the boat in behind the boat in out-of-the-way positions, as shown in broken lines in FIGURE 1 in connection with one support 19. When the support rods 19 are thus swung behind the boat 13, said rods will not interfere with navigation of the boat close to wharves or a boat or to stream banks.

Each windup mechanism 38 is provided with a lead cable 107 from the motor 63 and with a lead cable 109 from the solenoid 77 both suitably extended out of the housing 39 for connection to a battery, not shown, and the lead cables 107, 109 of each mechanism 38 are preferably connected together by a suitable control switch 111 for energizing the motor 63 and solenoid 77 simultaneously.

The operation of the invention will be readily understood from the foregoing. Suffice it to further explain that when the reels 67 are permitted to idle, the tow ropes 3 are payed out until unwound from said reels so that skiers, not shown, may use the same in positions remote from the boat 13. When the clutch sleeve 71 in each mechanism 38 is engaged with the clutch sleeve 73 and the solenoid 97 and the motor 63 energized, the associated or related ski rope 3 will be wound up, as when not in use, and together with its handle bars supported above water in the rear of the boat 13 for a substantial distance by the support rods 19 and the bracket 7. Obviously, if the ski rope 3 breaks any part thereof trailing the boat 13 may be wound up on the

related reel 67 so that it will not foul the outboard motor 9 or the propeller of the motor and as will further be obvious, either tow rope 3 may be wound up singly, or both tow ropes wound up simultaneously by energizing the motors 63 and the solenoids 77 of the windup mechanisms 38 singly or simultaneously.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. Windup and support means for a pair of water ski tow ropes comprising a U-shaped bracket, means for attaching the bracket to a transom of an outboard motor boat astride the motor above water and the propeller of said motor, a pair of support rods for the two ropes respectively, adapted to extend rearwardly from said bracket above water and having front and rear ends, means resiliently attaching the front ends of said rods to opposite sides of the bracket with said rods normally substantially horizontally disposed with the rear ends thereof diverging rearwardly from said bracket, a pair of windup mechanisms related to said ropes respectively, for winding up and unwinding the same singly or simultaneously, means for attaching said mechanisms to the bottom of the boat at opposite sides of the boat in front of said rods respectively, guide means on the rear ends of said rods and on said bracket for guiding said tow ropes to and from the windup mechanisms and whereby said rods and bracket support said ropes above water from the boat to a point remote from the boat, and power means for operating said windup mechanisms.

2. The combination of claim 1, said means for attaching said rods comprising helical springs terminally attached to the front ends of the rods and to said bracket and providing for lateral and vertical swinging of the rods in response to pull on the tow ropes.

3. The combination of claim 1, said guide means comprising an eye on the rear end of each rod, and eyes on opposite sides of said bracket.

4. The combination of claim 1, said windup mechanisms each including a reel operative in opposite directions for winding and unwinding the related tow rope, and said power means including an electric motor for operating the reel in a winding direction and solenoid operated clutch means for operatively connecting the motor to the reel.

5. Windup and support means for a pair of water ski tow ropes comprising a U-shaped bracket, means for attaching the bracket to the transom of an outboard motor boat in rearwardly extending position with said bracket astride the outboard motor of the boat, a pair of support rods for the tow ropes respectively, having front and rear ends, resilient means attaching the front ends of said rods to opposite sides of the bracket in normal substantially horizontally disposed and rearwardly diverging position, power means in said boat for winding up said ropes singly or simultaneously, and guide means on the rear end of the rods and opposite sides of the bracket for guiding said ropes to said power means and whereby said rods and bracket support said ropes above water from the boat to a point remote from the boat.

6. Windup and support means for a water ski tow rope, comprising a windup mechanism, means for mounting said mechanism in the bottom of a boat, and a support and guide means attachable to the transom of a boat to support the tow rope above water and guide the rope to said mechanism, said support and guide means including a support rod, means adapted to resiliently attach one end of said rod to the transom of a boat with

5

the other end normally resiliently urged toward a position to the rear and to one side of the boat, said windup mechanism including a driven shaft, a reel rotatable in opposite directions on said shaft and to which the tow rope is connected for winding up and unwinding in response to rotation of the reel in opposite directions, a clutch sleeve fixed on said shaft, a clutch sleeve fixed on said reel, said reel being slidable on said shaft in opposite directions to engage and disengage said sleeves, solenoid operated means for sliding the reel in a direction to engage said sleeves.

7. The combination of claim 6, said solenoid operated means comprising a solenoid casing having a retractile core extensible outwardly thereof, a pivoted shifter arm swingable in opposite directions and operatively connected to said reel to slide the same in opposite directions in

6

response to swinging of said arm in opposite directions, means operatively connecting the core to said arm to swing the arm in one direction in response to extension of the core and means on said core for swinging the arm in the opposite direction in response to retraction of the core.

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