May 28, 1963 K. G. BROCK 3,091,757

SIGNAL DEVICE FOR SKIING TOW ROPES

Filed Jan. 4, 1961 2 Sheets-Sheet 1

Fig.1

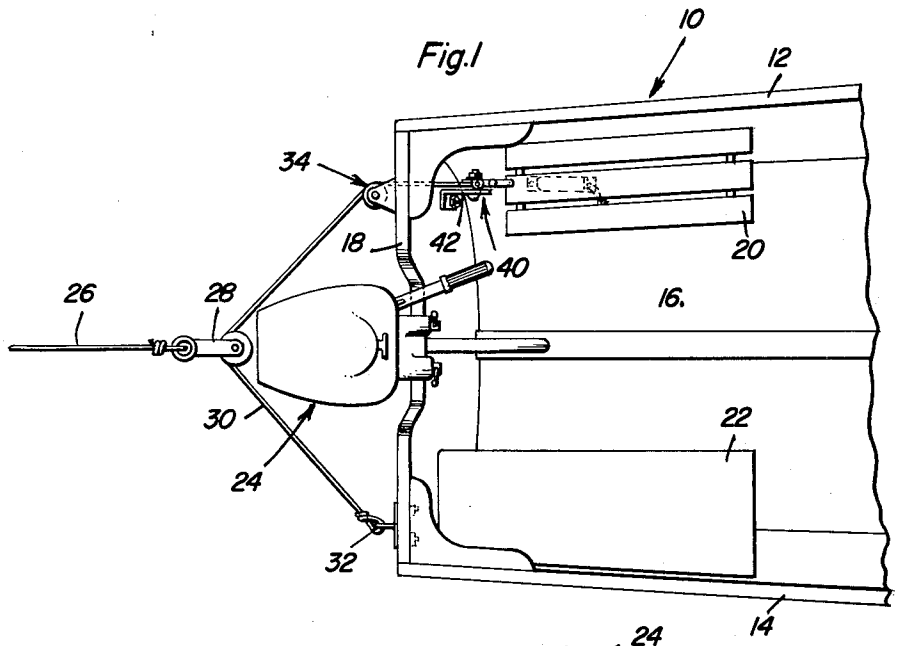
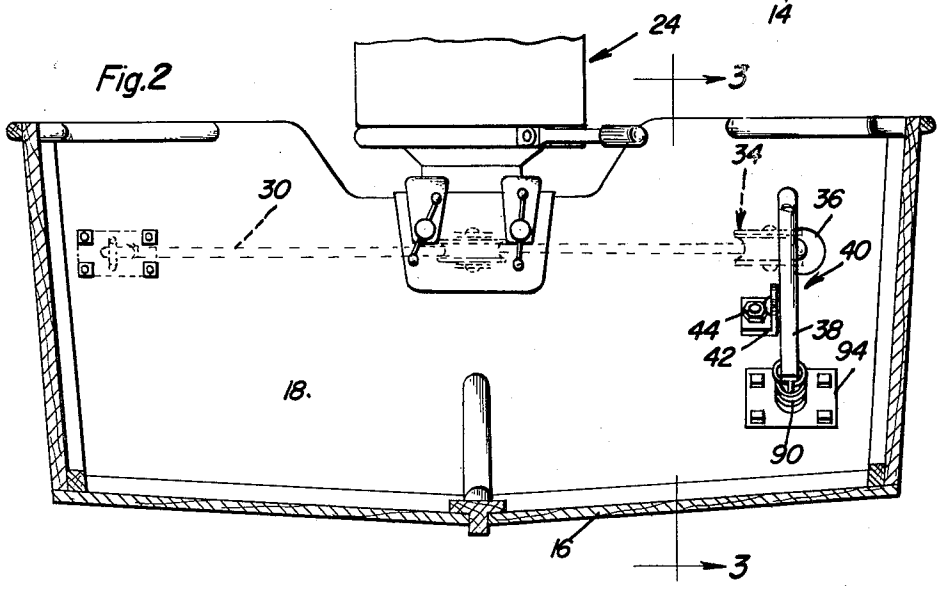


Fig.2



Kenneth G. Brock
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

May 28, 1963 K. G. BROCK 3,091,757

SIGNAL DEVICE FOR SKIING TOW ROPES

Filed Jan. 4, 1961 2 Sheets-Sheet 2

Fig.3

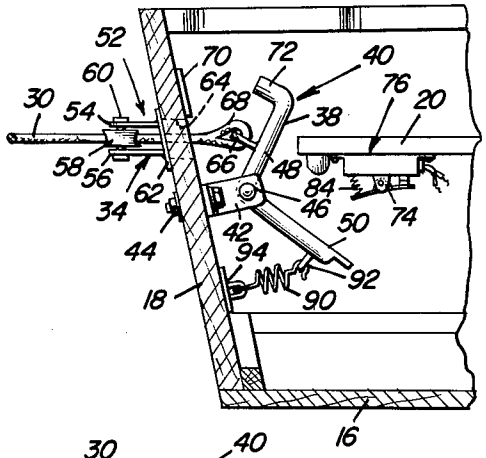
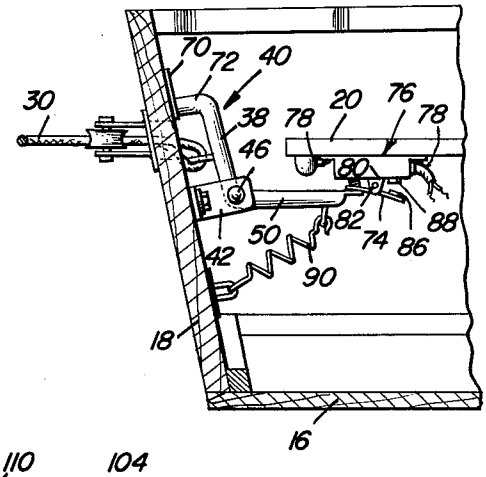


Fig.4



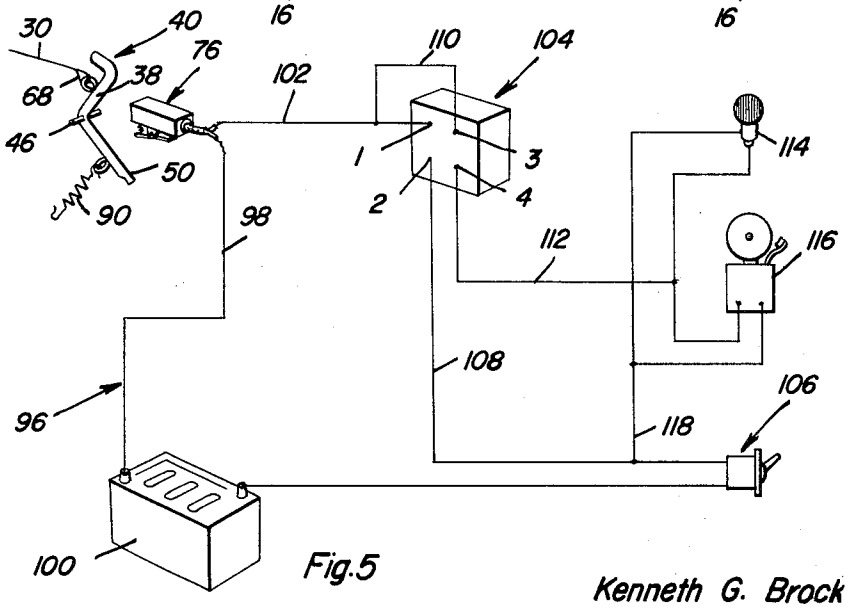


Fig.5

Kenneth G. Brock
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

United States Patent Office 3,091,757 Patented May 28, 1963

3,091,757

SIGNAL DEVICE FOR SKIING TOW ROPES

Kenneth G. Brock, 5840 Seminary Court, Oakland, Calif.

Filed Jan. 4, 1961, Ser. No. 80,678
2 Claims. (Cl. 340—213)

This invention relates to a novel and useful signal assembly for use in conjunction with boats utilized to pull water skiers and for the purpose of signalling the driver of the boat when a water skier has fallen and let go of the tow rope.

Oftentimes the operation of a power boat requires a large percentage of the attention of the driver of the boat and accordingly the driver is not always aware when a water skier he is pulling by means of the boat has fallen into the water and has let go of the tow rope. There have been some instances where the driver of a boat has traveled so far from the point at which the water skier has fallen before noticing the fact that the water skier has fallen, that the boat has moved out of sight of the water skier and the operator of the boat has been unable to locate the fallen water skier.

On bodies of water on which a number of power boats are being operated it is extremely important that the driver of a power boat be aware of when the skier has fallen from his skies and has let go of the tow rope inasmuch as the presence of the fallen skier in an open body of water is not readily noticeable by drivers of other power boats and there is a danger that one of the other power boats could run down the fallen skier. However, should the driver of the boat behind which the water skier has fallen substantially immediately become aware of the fact that the skier has fallen, he can turn the boat around and immediately proceed back to the fallen skier whereupon at least the towing boat will be visible to other power boats in the area thus warning them to stay clear and greatly reducing the possibility of the fallen skier being injured by other power boats.

It is therefore the main object of this invention to provide a signal assembly for boats which will provide an automatic signal readily perceptible to the driver of the boat in the event a water skier has fallen and let go of the rope being pulled by the boat.

A further object of this invention is to provide both audible and visual signals to the driver of the boat so that the possibility of the signal being unnoticed will be remote.

Still another object of this invention, in accordance with the preceding objects, is to provide a signal assembly for boats which will operate in response to the rearward pull on a tow line effected by a skier being pulled by the boat with the signal assembly being immediately actuated upon a decrease in the rearward pull on a tow rope such as when a water skier has let go of the tow rope.

A further object of this invention, in accordance with the immediately preceding object, is to provide an electrically operated signal assembly provided with a time delay means whereby a momentary slack occurring in the tow rope will be ineffective to render the operation of the audible and visual signals.

A still further object of this invention is to provide a signal assembly which may be readily inactivated by the driver of the boat thereby enabling the driver of the boat to cut off the audible and visual signals as soon as he has become aware of the same until such time as he is again attempting to pull a water skier out of the water whereupon he may then activate the signal assembly.

Another object of this invention is to provide an electrical circuit for the electrically operated audible and visual signals including an actuating switch normally closed

so as to actuate the signal assembly but with an actuator provided and adapted to be mounted in the boat for reciprocating movement between two limit positions and when in the first position engaged with the actuating switch to open the same in order to render the signal assembly inoperative. The actuator is provided with means for engagement by a tow rope and a guide means is provided for engagement with the tow rope whereby any rearward pull on the tow rope will effect a pull on the actuator to move the latter to the first position engaged with the actuating switch and in a direction disposed in the plane of movement of the actuator.

A final object to be specifically enumerated herein is to provide a signal assembly for boats which will in accordance with the preceding objects, conform to conventional forms of manufacture, be of simple construction and easy to operate so as to provide a device which will be economically feasible, long lasting and relatively trouble free in operation.

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 top plan view of the rear portion of a boat with a portion of the signal assembly of the instant invention being shown mounted in the aft portion of the boat and connected to the tow rope secured to the boat;

FIGURE 2 is a somewhat enlarged fragmentary vertical transverse sectional view taken substantially upon a plane passing through the boat just forwardly of the transom thereof;

FIGURE 3 is a fragmentary longitudinal vertical sectional view taken substantially upon the plane indicated by the section line 3—3 of FIGURE 2 and showing the actuating switch of the signal assembly in the closed position for actuating the signal assembly;

FIGURE 4 is a fragmentary vertical longitudinal sectional view similar to that of FIGURE 3 but showing the actuator in its position normally assumed with a rearward pull being exerted on the tow rope and the actuator engaged with the actuating switch of the signal assembly to retain the latter in an open position thus rendering the audible and visual signals inoperative; and

FIGURE 5 is a diagrammatical view of the wiring circuit of the signal assembly of the instant invention with the actuating switch and actuator being shown in perspective.

Referring now more specifically to the drawings the numeral 10 generally designates a boat including sides 12 and 14, a bottom 16 and a transom 18. The boat 10 also includes seats 20 and 22 in the aft portion thereof and has an outboard motor generally referred to by the reference numeral 24 secured to the transom 18 for propelling the boat 10.

A tow rope 26 is illustrated and is provided with a slide guide as pulley sheave 28 on its forward end slidably receiving a bridle 30 which has one end secured to the transom 18 as at 32 and the other end laterally deflected around a pulley guide means generally referred to by the reference numeral 34 and through an opening 36 formed in the transom 18 for engagement with the actuator 38 which comprises a part of the signal assembly comprising the present invention which assembly is generally designated by the reference numeral 40.

The signal assembly includes a mounting bracket 42 secured to the transom 18 in any convenient manner such as by fasteners 44. The mounting bracket pivotally mounts the generally L-shaped actuator 38 for rotation

about an axis extending transversely of the plane in which the actuator 38 is disposed by means of pivot pin 46. The pivot pin 46 passes through the juncture of the arms 48 and 50 of the L-shaped actuator 38 whereupon the actuator 38 is mounted for rotation in a plane extending longitudinally of the boat 10.

The guide means 34 includes a bifurcated bracket generally referred to by the reference numeral 52 between whose furcations 54 and 56 a pulley wheel 58 is journaled for rotation by means of axle pin 60. The bracket 52 includes a base 62 by which the bracket is secured to the transom 18 in any convenient manner. An opening 64 is formed through the transom 18 in order to enable the end of the bridle 30 remote from point 32 to pass through the transom and be secured to the arm 48 of the actuator 38 as at 66 by means of loop 68 formed on that end of the bridle.

A stop block 70 is secured to the inner surface of the transom 18 and the free end of the arm 48 terminates in a laterally directed end portion 72 for engagement with the stop block 70. With attention now directed to FIGURE 4 of the drawings it will be noted that when the end portion 72 is in engagement with the stop block 70, the arm 50 has engaged the contact arm 74 of the actuating switch which is generally designated by the reference numeral 76 and is secured to the undersurface of the seat 20 by means of suitable fasteners 78. The contact arm 74 is pivoted to a bifurcated bracket 80 by means of pivot pin 82. A compression spring 84 normally urges the contact arm 74 into position with the contacts 86 and 88 engaged with each other. However, a rearward pull on the tow rope 26 effects a rearward pull on the pulley sheave 28 and the end of the bridle 30 disposed forwardly of the transom 18 whereupon the actuator 38 is pivoted in a counterclockwise direction as viewed in FIGURES 3 and 4 to the position illustrated in FIGURE 4 with the arm 50 engaging the end of the contact arm removed from the contact 86 to compress the spring 84 and urge the contacts 86 and 88 away from each other.

One end of an expansion spring 90 is secured to the arm 50 as at 92 and the other end is secured to the transom 18 by means of a bracket member 94. Thus, when a water skier is not being pulled by the ski rope 26, the spring 90 urges the actuator 38 from the position illustrated in FIGURE 4 of the drawing to the position illustrated in FIGURE 3 of the drawings wherein the contacts 86 and 88 are closed.

With attention now directed more particularly to FIGURE 5 of the drawings it will be seen a signal assembly circuit generally referred to by the reference numeral 96 in which the actuating switch 76 is disposed. A wire 98 extends from the battery 100 to the contact 88 of the switch 76 and a wire 102 extends to terminal 1 on the time relay housing generally referred to by the reference numeral 104. Terminal 2 of the relay housing is in turn connected to a manually operable on-off switch generally referred to by the reference numeral 106 by means of a wire 108. It is to be understood that any suitable electrical heating element is disposed between the terminals 1 and 2 of the housing 104. A bridging wire 110 connects terminal 3 to the wire 102 and a wire 112 connects the bulb 114 and the buzzer 116 to terminal 4 on the housing 104 while a wire 118 connects the bulb and buzzer to the wire 108.

It is to be understood that a bimetallic member (not shown) is connected to either one of the terminals 3 and 4 for engagement with a contact connected to the other of the terminals 3 and 4 whereupon upon closing of the switch 106 and the contacts 86 and 88 current will flow through the heating element disposed between the terminals 1 and 2 which will in turn heat the bimetallic member and cause the latter to make contact with the contact carried by the other of the terminals 3 and 4 in order to complete the circuit to the bulb and buzzer signals 114 and 116 respectively.

Inasmuch as the specific structure of the time delay is not important as any suitable commercially available time delay mechanism could be used, the details of construction of the time delay will not be more specifically set forth herein and it is to be noted that the switch 106 may be conveniently placed forwardly in the boat 10 for manipulation by the driver of the boat.

In operation, before the tow rope 26 is used to pull a skier, the switch 106 is positioned in the off position so as to prevent the signals 114 and 116 from operating. As soon as a skier is placed on the rear end of the tow rope 26 and the boat 10 is started through the water to pull the skier up on top of the water, the switch 106 may be closed in order to place the circuit 96 in condition for operation. With the rearward pull of the skier on the tow rope 26, the end of the bridle 30 remote from point 32 is effecting a rearward pull on the arm 48 of the actuator 38 in which case the latter is pivoted in a counterclockwise direction as viewed in FIGURES 3 and 4 from the position illustrated in FIGURE 3 to the position illustrated in FIGURE 4 whereupon the arm 50 will engage the contact arm 74 to move the contact 86 from engagement with the contact 88 thus opening the circuit 96 and preventing the actuation of the circuit 96. However, should the water skier fall and let go of the tow rope 26, the spring 90 will resiliently urge the actuator 38 from a position illustrated in FIGURE 3 of the drawings whereupon the contacts 86 and 88 will be closed thus enabling the flow of electricity through the heating element disposed between the contacts 1 and 2 of the housing 104. In approximately five seconds the heating element will have generated enough heat to have the bimetallic member make contact with the contact carried by the other of the contacts 3 and 4 whereupon the circuit to the bulb 114 and the buzzer 116 will be completed thus effecting operation of both the audible and visual signals.

If the water skier is merely crossing from one side of the wake of the boat to the other and causes only temporary conditions of slack in the tow rope 26, the heating element disposed between the contacts 1 and 2 will not operate for a sufficient period of time to complete the circuit between the contacts 3 and 4 by means of the bimetallic member disposed therebetween and therefore the audible and visual signals will not be operated.

The foregoing is considered as illustrative only of the principles of the invention. Further, 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 and operation 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. In combination with a boat having a transom with an opening formed therethrough, a signal assembly to signal the driver of a boat that a skier has fallen and has let go of the tow rope, said signal assembly comprising an L-shaped actuator having a pair of angularly disposed arms and pivotally secured in said boat for movement about an axis extending transversely of said opening and the plane containing said arms and adjacent the inner section of said arms between a first position with one of said arms extending across said opening and its free end abutting the inner surface of said transom and the other of said arms projecting forwardly away from said transom and a second position with the free end of said one arm swung forwardly and away from engagement with said transom, an elongated bottom member having one end secured to the exterior of said transom a spaced distance from said opening, guide means carried by the exterior of said transom and disposed adjacent said opening, the other end of said bridle member being slidably engaged by said guide means and aligned with said opening thereby and passed through said opening and secured to said

one arm, means normally resiliently urging said L-shaped actuator toward said second position, a slide guide engaged with and reciprocable along said bridle member and adapted to have the forward end of a tow rope secured thereto whereby a rearward pull on said tow rope will urge said actuator toward said first position, a wiring circuit including a source of electricity, a normally closed actuating switch in said circuit and mounted adjacent said actuator for engagement by said other arm upon movement of said actuator toward said first position to open said switch in response to a rearward pull on said tow rope, and electrical alarm means in said circuit.

2. The combination of claim 1 including electrically

operated time delay switch means disposed in series with said alarm means in said circuit for delaying operation of said alarm means after the closing of said actuating switch.

References Cited in the file of this patent

UNITED STATES PATENTS

573,944	West	Dec. 29, 1896
1,132,103	McClanahan	Mar. 16, 1915
2,210,330	Seguin, nee Niggl et al.	Aug. 6, 1940
2,875,430	Kayser	Feb. 24, 1959

OTHER REFERENCES

Popular Mechanics, March 1959, pages 156 and 157.