

Jan. 23, 1962

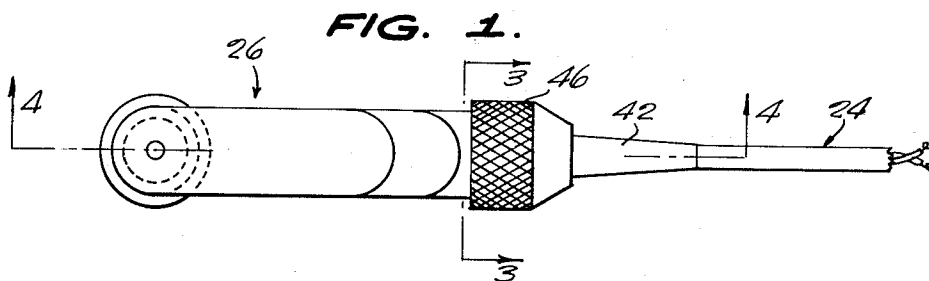
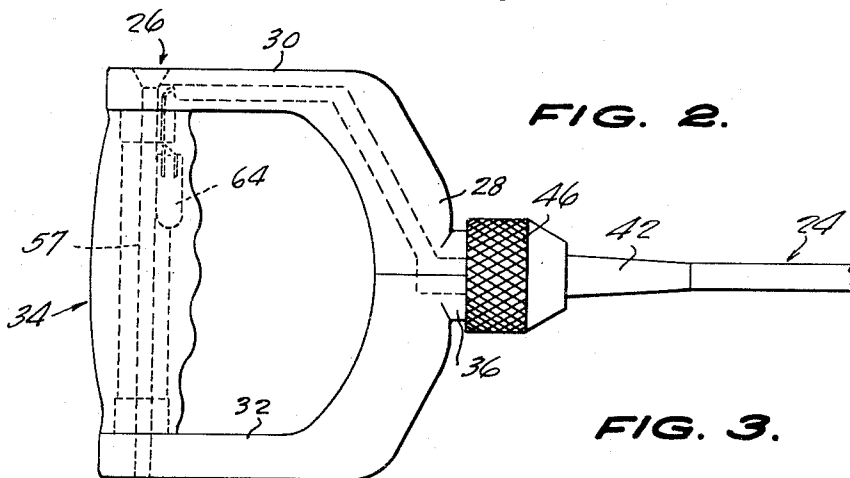
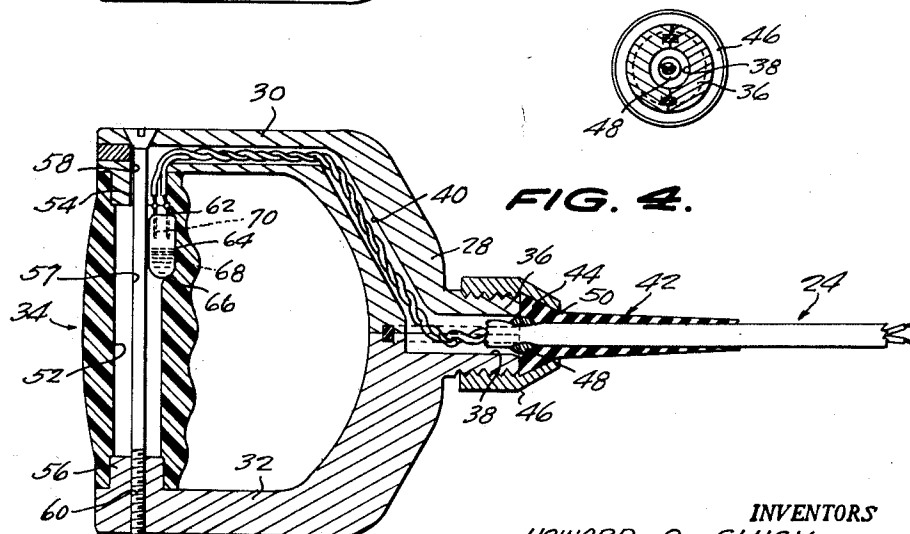
H. O. CLUCK ETAL

3,018,474

TOW LINE HANDLE AND SIGNAL ASSEMBLY FOR WATER SKIERS

Filed Feb. 26, 1960

2 Sheets-Sheet 1



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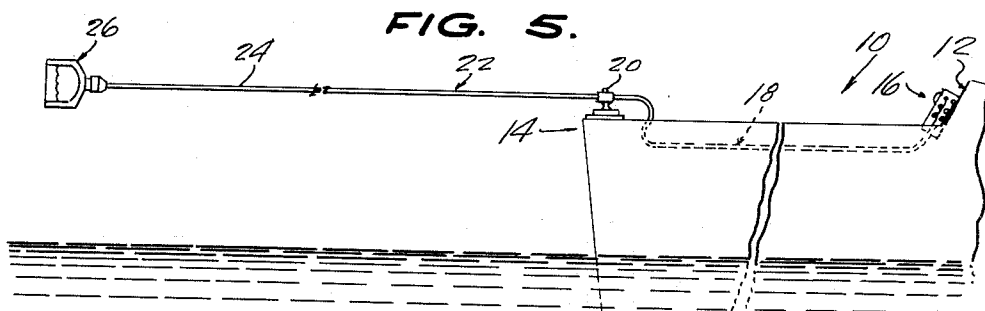
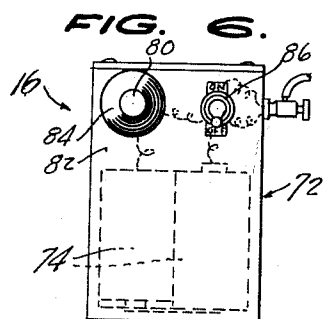
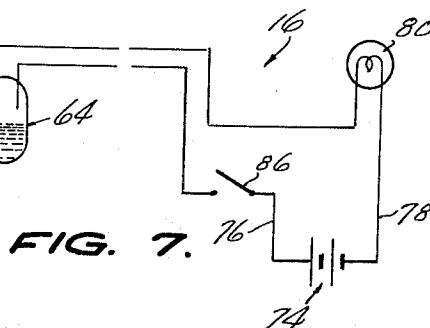
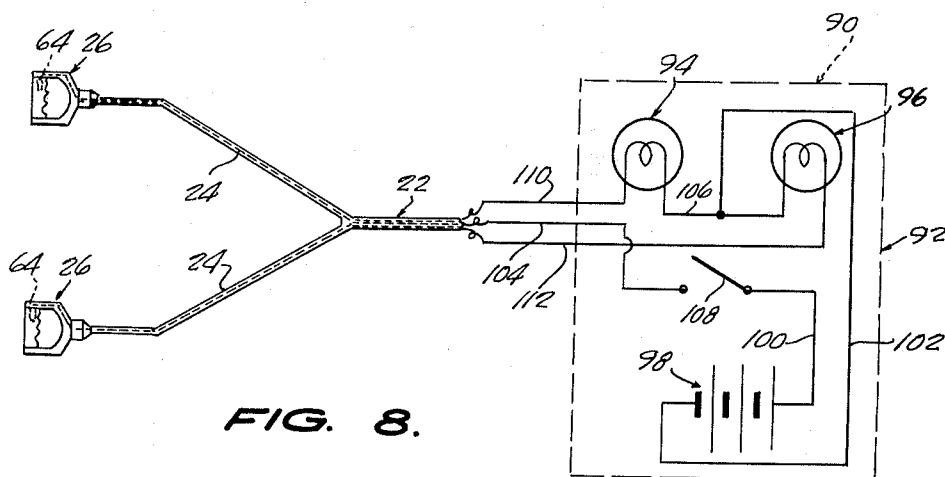
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TOW LINE HANDLE AND SIGNAL ASSEMBLY FOR WATER SKIERS

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2 Sheets-Sheet 2



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3,018,474

TOW LINE HANDLE AND SIGNAL ASSEMBLY FOR WATER SKIERS

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11 Claims. (Cl. 340-366)

This invention relates to a novel electrical safety tow-
line handle assembly signal assembly for use by water
skiers for signalling wanted changes in direction to the
operator of a tow boat.

The primary object of the invention is to provide an
efficient and easily used assembly of the kind indicated
which involves an insulated tow line which is adapted
to be secured to a tow boat to tow a water skier, the tow
line being wired to an electrical signal device, to be
mounted within sight of the operator of the boat, so as
to be seen and understood by the operator, even when
distracted, as by water traffic or conversation with com-
panions, whereby the skier can direct changes of direc-
tion of the boat, in the interest of safety or preference
of direction, the assembly having separate handles which
contain separate switches for selectively operating left-
and right-hand signals in the signal device.

Another object of the invention is the provision of a
reliable and rugged assembly of the character indicated
above, wherein the handle switches are normally open
gravity operated switches, such as mercury switches, so
as to be closable by turning the handles out of normal
vertical positions, to horizontal positions, and so that
should a skier fall into the water and lose the tow line,
the bouncing of the released handles in the water will
intermittently operate both of the signals, so as to im-
mediately and insistently notify the operator of the boat
of the situation, and enable immediate skier recovery
maneuvering of the boat, to the end that the skier can
be easily picked up by the boat and saved from being struck
by other boats in the vicinity and/or from over-exposure
or drowning in the water.

Other important objects and advantageous features of
the invention will be apparent from the following descrip-
tion and the accompanying drawings, wherein, for pur-
poses of illustration only, a specific form of the inven-
tion is set forth in detail.

In the drawings:

FIGURE 1 is a fragmentary edge elevation of a tow
line switch handle and a tow line section attached thereto;
FIGURE 2 is a plan view of FIGURE 1;

FIGURE 3 is a transverse section taken on the line
3-3 of FIGURE 1;

FIGURE 4 is a longitudinal section taken on the line
4-4 of FIGURE 1;

FIGURE 5 is a contracted and schematic side eleva-
tion, showing an assembly of the invention installed on a
ski tow boat;

FIGURE 6 is a front elevation of a form of signal
device, involving a single handle switch and a single
warning light;

FIGURE 7 is a wiring diagram of the signal device of
FIGURE 6; and

FIGURE 8 is a schematic, partly in elevation, showing
a two-light signal device and the electrical connection
thereto.

Referring in detail to the drawings, wherein like
and related numerals designate like and related parts through-
out the several views, the numeral 10 generally design-
ates a power tow boat having an instrument panel 12
and a stern 14. Upon the instrument panel 12 is suit-
ably mounted an electrical signal device 16 to which is
secured and connected a rearwardly extending insulated

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cable 18 which is fixedly secured in an extends through
a bracket 20 which is fixedly mounted, as upon the boat
stern 14. The cable 18 has extending rearwardly from
the bracket 20 a relatively low flexible portion, which
constitutes a tow line 22. At its rear end, the tow line 22
is divided into two similar insulated rearwardly divergent
sections 24, to the rear ends of which similar skier's tow
line loop handles 26 are severally secured.

As shown in FIGURES 1 to 4, the handles 26 prefer-
ably comprise rigid molded plastic U-shaped forms having
bight portions 28 having parallel rearwardly extending
upper and lower legs 30 and 32, respectively, on their
ends, and transverse, flexible cushion hand grip cross
bars 34 which extend between and are fixed to the rear
ends of the legs 30 and 32. Forwardly extending thread-
ed bosses 36 are fixed on the bight portions 28 at the
centers of the forward sides thereof and have bores 38
extending therethrough which communicate, at their rear
ends, with bores 40 which extend through one side of
the bight portions and through the upper leg 30. The
bores 38 and 40 form conduits for electrical wires, here-
inafter described, which extend through the tow line
sections 24, the tow line 22, and the cable 18, to the
signal device. The rear ends of the sections 24 have
thereon rigid reinforcing sleeves 42 which have enlarged
and flared heads 44 on their rear ends which abut the
bosses 36, and are secured thereto, as by means of tapered
cap nuts 46 threaded onto the bosses 36, with compres-
sion balls 48 surrounding the wires, and wedged between
the boss bores 36 and seats 50 in the heads 44, as shown
in FIGURE 4.

The hand grip bars 34, as seen in FIGURE 4, have
axial bores 52 extending therethrough whose ends are
engaged over studs 54 and 56 which extend inwardly from
the legs, and over which the bar ends are engaged by
flexing the bars 34. Extending through bores 58 in the
upper studs 54 are bolts 57 which extend through the
bars 34 and are threaded, as indicated at 60, in the lower
studs 56, for rigidifying the handles and reinforcing the
grip bars 34. The bores 52 of the grip bars 34 have, at
one end thereof, recesses 62 in which mercury switches
64 are confined, with their lower ends 66 containing mer-
cury 68, out of bridging relation to a pair of contacts
70, in the upper ends of the switches, while the handles
are held in normal vertical erect positions by a skier being
towed. With this arrangement, the switches 64 are closed
whenever either or both of the handles 26 are turned to
horizontal positions, so that the signal device is energized.
Whenever the handles 26 are released or dropped inad-
vertently by a skier being towed, they are agitated or
bounced by being pulled through the water, so that the
switches are intermittently opened and closed. This op-
erates the signal device intermittently so as to inform the
operator of the tow boat 10 that the skier has let go of
the tow line and is in the water, waiting to be picked up.

With this arrangement, and without releasing the
handles 26, the skier can, by tilting one or the other of
the handles 26 to a horizontal position, close the corre-
sponding switch 64 and thereby operate the signal device,
so as to instruct the tow boat operator. In the case of
a single light signal device, such tilting of a handle 26
conveys a prearranged signal to the boat operator; and
in the case of a two-light signal device, serves to direct
the operator to make a left- or a right-hand turn.

The single light signal device 16, shown in FIGURES
6 and 7, can comprise a casing 72, containing low-voltage
batteries, such as flashlight cells 74, which are connected
by wires 76 and 78 to an electric bulb 80 which is ex-
posed through a wall 82 of the casing, at the center of
a reflector 84, the wires 76 and 78 leading through the
cable 18 to a handle 26 and its switch 64. A toggle

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switch 86, mounted on the wall 82, can be connected in the wire 76.

The two-light signal device, shown in FIGURE 8, and generally designated 90, comprises a suitable casing 92 exhaling two laterally spaced electric bulbs 94 and 96, being a red left-hand turn signalling bulb and a right-hand turn signalling bulb, respectively, which are connected in a three-wire circuit leading through the cable 18 to the handles 26, and containing a flashlight cell battery 98. The three-wire circuit comprises wires 100 and 102, leading from opposite sides of the battery 98, and severally connected to a cable wire 104 and to a common wire 106 connected to one side of the bulbs 94 and 96, a switch 108 being connected in the wire 100. The remaining sides of the bulbs 94 and 96 are severally connected to cable wires 110 and 112.

With this arrangement, a skier can call for a left-hand turn of the tow boat 10 simply by rotating the left-hand handle 26 to a horizontal position, while maintaining the erect position of the right-hand handle, so as to close the related handle switch and energize the left-hand turn bulb 94. A right-hand turn is signalled on the device 90 by a similar manipulation of the right-hand handle 26, while maintaining the left-hand handle in its normal erect position. Whenever the skier drops or loses one or both of the handles 26 in the water, the handles are bounced and agitated by the water as the tow boat moves forwardly, so that the handle switches are intermittently closed and the bulbs 94 and 96 are intermittently energized, so that the boat operator is immediately and urgently notified that the skier has dropped the tow line and is in the water waiting to be picked up.

While there have been shown and described herein preferred forms of the invention, it is to be understood that the invention is not necessarily confined thereto, and that any change or changes in the structures of and in the relative arrangements of components thereof are contemplated as being within the scope of the invention as defined by the claims appended hereto.

What is claimed is:

1. A tow line handle and signal assembly comprising an energized electrical signal device for mounting on a ski tow boat, a tow line having a rear end, handle means secured to said rear end, gravity-operated switch means on said handle means, and conductor means extending along the tow line and connecting said switch means to the signal device, said conductor means being enclosed in the tow line and said switch means being enclosed in the handle means, said switch means being normally open mercury switch means adapted to be closed by turning the handle means from normal vertical position to a horizontal position.

2. A tow line handle and signal assembly comprising an electric signal device for mounting on a ski tow boat, a tow line having a rear end, handle means secured to said rear end, gravity-operated switch means on said handle means, and conductor means extending along the tow line and connecting said switch means to the signal device, said signal device comprising a casing, an electric light bulb exposed on the casing, a battery enclosed in the casing and serially connected to the bulb and to the switch means through said conductor means.

3. A tow line handle and signal assembly comprising an electric signal device for mounting on a ski tow boat, a tow line having a rear end, handle means secured to said rear end, gravity-operated switch means on said handle means, and conductor means extending along the tow line and connecting said switch means to the signal device, said signal device comprising a casing, an electric light bulb exposed on the casing, a battery enclosed in the casing and serially connected to the bulb and to the switch means through said conductor means, said handle means consisting of a single handle.

4. A tow line handle and signal assembly comprising an energized electrical signal device for mounting on a

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ski tow boat, a tow line having a rear end, handle means secured to said rear end, gravity-operated switch means on said handle means, and conductor means extending along the tow line and connecting said switch means to the signal device, said handle means comprising a left-hand handle and a right-hand handle, said tow line having divergent sections on its rear end which are severally secured to the handles, said handles having individually gravity-operated switches thereon, said conductor means having portions extending along said sections and connected to the switches.

5. A tow line handle and signal assembly comprising an energized electrical signal device for mounting on a ski tow boat, a tow line having a rear end, handle means secured to said rear end, gravity-operated switch means on said handle means, and conductor means extending along the tow line and connecting said switch means to the signal device, said handle means comprising a left-hand handle and a right-hand handle, said tow line having divergent sections on its rear end which are severally secured to the handles, said handles having individual gravity-operated switches thereon, said conductor means having portions extending along said sections and connected to the switches, said signal device having distinct left- and right-hand turn dictating electric bulbs, and a battery serially connected to the bulbs and severally connected to the left- and right-hand handle switches, through said conductor means.

6. A tow line handle and signal assembly comprising an energized electrical signal device for mounting on a ski tow boat, a tow line having a rear end, handle means secured to said rear end, gravity-operated switch means on said handle means, and conductor means extending along the tow line and connecting said switch means to the signal device, said handle means comprising a loop handle having a U-shaped form having a bight portion and upper and lower legs extending rearwardly from the bight portion, a hand grip cross bar extending between the legs, means securing the cross bar to the legs, a boss extending forwardly from the bight portion, means connecting the tow line to said boss, said conductor means extending rearwardly through the tow line and through said boss, said upper handle leg having a bore extending therealong through which the conductor means extends, said cross bar having an axial bore communicating with the leg bore, a vertical mercury switch mounted in the cross bar bore having upper and lower ends, contacts in the upper end of the switch to which the conduit means are connected, and a free body of mercury in the lower end of the switch, said mercury body being out of contact with the contacts in the normal erect position of the handle and being in bridging contact with the contacts in a horizontal position of the handle.

7. A tow line handle and signal assembly comprising an energized electrical signal device for mounting on a ski tow boat, a tow line having a rear end, handle means secured to said rear end, gravity-operated switch means on said handle means, and conductor means extending along the tow line and connecting said switch means to the signal device, said handle means comprising a loop handle having a U-shaped form having a bight portion and upper and lower legs extending rearwardly from the bight portion, a hand grip cross bar extending between the legs, means securing the cross bar to the legs, a boss extending forwardly from the bight portion, means connecting the tow line to said boss, said conductor means extending rearwardly through the tow line and through said boss, said upper handle leg having a bore extending therealong through which the conductor means extends, said cross bar having an axial bore communicating with the leg bore, a vertical mercury switch mounted in the cross bar bore having upper and lower ends, contacts in the upper end of the switch to which the conduit means are connected, and a free body of mercury in the lower end of the switch, said mercury body being out of contact

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with the contacts in the normal erect position of the handle and being in bridging contact with the contacts in a horizontal position of the handle, said upper end lower handle legs having opposed laterally inwardly extending bosses, said cross bar being tubular and flexible with its ends engaged over related bosses, and a bolt extending through one leg boss and the bore of the cross bar and threaded in the other leg boss.

8. A tow line handle and signal assembly comprising an energized electrical signal device for mounting on a ski tow boat, a tow line having a rear end, handle means secured to said rear end, gravity-operated switch means on said handle means, and conductor means extending along the tow line and connecting said switch means to the signal device, said handle means comprising a loop handle having a U-shaped form having a bight portion and upper and lower legs extending rearwardly from the bight portion, a hand grip cross bar extending between the legs, means securing the cross bar to the legs, a boss extending forwardly from the bight portion, means connecting the tow line to said boss, said conductor means extending rearwardly through the tow line and through said boss, said upper handle leg having a bore extending therealong through which the conductor means extends, said cross bar having an axial bore communicating with the leg bore, a vertical mercury switch mounted in the cross bar bore having upper and lower ends, contacts in the upper end of the switch to which the conduit means are connected, and a free body of mercury in the lower end of the switch, said mercury body being out of contact with the contacts in the normal erect position of the handle and being in bridging contact with the contacts in a horizontal position of the handle, said tow line having a reinforcing sleeve on its rear end having an enlarged head abutting the related end of the bight boss, and a cap nut surrounding the bight boss and said head and threaded onto the bight boss.

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9. In combination, a ski tow boat having a tow line leading rearwardly therefrom and having a rear end, energized electrical signal means on said boat, electrical conductor means connected to said signal means and extending rearwardly along the tow line, a skier's handle secured on the rear end of the tow line, and a gravity operated switch on said handle and connected in circuit with said conductor means.

10. In combination, a ski tow boat having a tow line leading rearwardly therefrom and having a rear end, energized electrical signal means on said boat, electrical conductor means connected to said signal means and extending rearwardly along the tow line, a skier's handle secured on the rear end of the tow line, and a gravity operated switch on said handle and connected in circuit with said conductor means, said conductor means being enclosed within the tow line and said switch being enclosed within said handle.

11. In combination, a ski tow boat having a tow line leading rearwardly therefrom and having a rear end, energized electrical signal means on said boat, electrical conductor means connected to said signal means and extending rearwardly along the tow line, a skier's handle secured on the rear end of the tow line, and a gravity operated switch on said handle and connected in circuit with said conductor means, said conductor means being enclosed within the tow line and said switch being enclosed within said handle, said switch being open in the normal erect position of the handle and being adapted to close in any other position of the handle.

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