

IN

THE UNITED STATES PATENT OFFICE

UTILITY PATENT APPLICATION

FOR

FISHING LIGHT

BY

REBECCA NOGA

1 **CROSS-REFERENCE TO RELATED APPLICATIONS**

2
3 This application is a Continuation-in-Part of US Utility Patent Application 15,917,751,
4 filed on 3/18/2018, which is itself a Continuation-in-Part of US Utility Patent Application
5 15/265,725, filed on 9/14/2016, both incorporated herein by reference.
6
7

8 **STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH AND**
9 **DEVELOPMENT**

10
11 Not Applicable.
12
13

14 **FIELD OF THE INVENTION**

15
16 This invention relates to lanterns, and more particularly to fishing lanterns to improve
17 catching fish and bait.
18
19

20 **DISCUSSION OF RELATED ART**

21
22 Some fish and other sea life avoid light and therefore must be caught at night. Lanterns to
23 allow anglers to see fish for fishing at night commonly comprise a light that lays on the

1 sea floor. These lights typically have an elongated body with an electric cable attached at
2 one end with the other end of the cable long enough to run up to a boat or other vessel.
3 Such common lights limit the number of fish that can be viewed because the light sinks to
4 the sea floor and lays on its elongated side which only emits light at about 180 degrees.
5 Fish are also attracted to light sources since light sources attract other organisms that fish
6 eat.

7
8 However, it has been found that strobe lights of particular frequencies and colors are
9 helpful not only to attract fish to the surface of the water, but also to repel predators such
10 as catfish. Catfish and other predators routinely interfere with fishing and are a nuisance
11 to fishermen.

12
13 Therefore, there is a need for a device that provides a maximum light and accompanying
14 viewing capability. Such a needed invention would allow anglers to see more fish by
15 emitting light about 360 degrees. Further, such a needed invention would allow for a
16 wide variety of light colors and flashing/intensity patterns, and could also be used for
17 above-water applications such as a lantern, a boat navigation or bow light, and other uses.

18 In particular such a needed invention would include light color and strobe frequency
19 combinations particularly well-suited to the capture of fish. The present invention
20 accomplishes these objectives.

SUMMARY OF THE INVENTION

The present device is a submersible lantern that, in one use, is anchored with a weight to the sea floor. The lantern emits multiple colors of light such as red, green, blue, and white dependent on a user's specific application, and certain strobe frequencies that are particularly effective at attracting a desired fish or sea creature while repelling catfish and other non-desirable sea life are pre-programmed into the device. Further the present device has a float to ensure the lantern is in a vertical orientation, maximizing the amount of light produced in a body of water so as to promote catching of the maximum number of fish or the like.

The lantern consists of an elongated body with lights surrounding the body and a first and second end cap. The first end cap has as an electric cable to provide an electrical current to the light. The first end cap also has a mounting structure for attaching a weight which will lay on the sea floor in some applications. The second end cap has a mounting structure for attaching a float to ensure the lantern orients in an upright vertical position, and may be used in conjunction with a counterweight that is fixed with the mounting structure of the first end cap to ensure the vertical orientation of the lantern. A switch is integrated in the cable to cycle between multiple light patterns or illumination modes, as well as to vary the intensity of the lights.

In other embodiments the lantern has a wireless circuit to remotely control the lights via a wireless network such as with a mobile phone, laptop or other wireless device. In such

1 an embodiment, an antenna is included proximate the switch for use above the water for
2 optimal reception.

3
4 It has been found that such a flashing pattern is particularly well suited for repelling
5 catfish and attracting squid. At about 2.67 Hz catfish are effectively repelled from the
6 area surrounding the lantern. The present device includes these preset frequencies. Other
7 features and advantages of the present invention will become apparent from the following
8 more detailed description, taken in conjunction with the accompanying drawings, which
9 illustrate, by way of example, the principles of the invention.

12 **DESCRIPTION OF THE DRAWINGS**

14 FIG. 1 is a diagram of the lantern used in commercial and recreational fishing;

15 FIG. 2 is a diagram showing the lantern, lantern mounts and an electrical cable
16 terminating at a switch and battery clips;

17 FIG 3 is a partial diagram showing the lantern and first end cap separated;

18 FIG 4 is a partial diagram showing the PCB board partially inserted into the lantern;

19 FIG 5 is a partial diagram, showing the first end cap, PCB board and lantern;

20 FIG. 6 is a diagram showing a two-part electrical connector and two mating power
21 adapter cords therefore;

22 FIG. 7 is a diagram showing an AC Adapter and a second part of the two-part electrical
23 connector;

1 FIG. 8 is a timing chart showing a strobe frequency of 1 Hz, the lower end of the
2 preferred range;

3 FIG. 9 is a timing chart showing a strobe frequency of 2 Hz; and

4 FIG. 10 is a timing chart showing a strobe frequency of 10 Hz.
5
6

7 **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

8

9 Illustrative embodiments of the invention are described below. The following
10 explanation provides specific details for a thorough understanding of and enabling
11 description for these embodiments. One skilled in the art will understand that the
12 invention may be practiced without such details. In other instances, well-known
13 structures and functions have not been shown or described in detail to avoid
14 unnecessarily obscuring the description of the embodiments.
15

16 Unless the context clearly requires otherwise, throughout the description and the claims,
17 the words “comprise,” “comprising,” and the like are to be construed in an inclusive
18 sense as opposed to an exclusive or exhaustive sense; that is to say, in the sense of
19 “including, but not limited to.” Words using the singular or plural number also include
20 the plural or singular number respectively. Additionally, the words “herein,” “above,”
21 “below” and words of similar import, when used in this application, shall refer to this
22 application as a whole and not to any particular portions of this application. When the
23 claims use the word “or” in reference to a list of two or more items, that word covers all

1 of the following interpretations of the word: any of the items in the list, all of the items in
2 the list and any combination of the items in the list. When the word “each” is used to
3 refer to an element that was previously introduced as being at least one in number, the
4 word “each” does not necessarily imply a plurality of the elements, but can also mean a
5 singular element.

6
7 FIG. 1 illustrates a waterproof lantern 1 useful in the commercial fishing industries. The
8 lantern 1 is placed into the water 16 for the fish to see at night. The lantern 1 has at a first
9 end, a flexible water proof electric cable 6 fixed at the first end and that extends to a boat
10 15 other above-water structure. Attached to the first end of the lantern 1 is a weight 17
11 that anchors the lantern 1 to the sea floor 18. Preferably the weight 17 is fixed to the
12 lantern 1 with a cable or cord of more than 10 feet at the first end.

13
14 Additionally, a first end cap 3 has a mounting bracket 5 for a clip 14 to attach to a
15 counter-weight 19 for maintaining a generally vertical orientation of the lantern 1
16 underwater in cooperation with a float 9. Such a counter-weight 19 may be any of a
17 variety of weights available in the marketplace of sufficient weight to orient the lantern 1
18 vertically but not to overcome the float 9 and cause the lantern 1 to sink to the sea floor
19 18. The clip 14 is also the attachment point for the anchor rope with weight 17 that rests
20 on the sea floor 18.

21
22 FIG. 2 illustrates the lantern 1 having an elongated body 2, the first end cap 3 and a
23 second end cap 4. Each end cap 3,4 is sealed from water leaks using acrylic glue, or the

1 like. The first end cap 3 with the mounting bracket 5 (FIG. 3) for the clip 14 may also be
2 used to attach the weight 17 to the lantern 1 via a rope or chain. Additionally, a counter
3 sink weight 19 is added when the float 9 is attached to the lantern 1 to orient the lantern 1
4 in a vertical, upright position even in strong currents.

5
6 The second end cap 4 has a mounting structure 7 to attach a line 8 to the float 9. The
7 mounting bracket 5 may be attached to the first end cap 3, or may be integrally formed
8 with end cap 3 in an injection molded plastic operation. Likewise, the mounting structure
9 7 may be attached to the end cap 4 or integrally formed therewith. The electric cable 6 is
10 attached at one end to the first end cap 3 of the elongated body 2.

11
12 The other end of the cable 6 has a push button switch 10 and a first part 31 of a two-part
13 electrical connector 30 (FIGS. 6 and 7) that may be fixed to an adapter 20 that adapts to a
14 particular type of power source. For example, a battery clip adapter 21 includes a second
15 part 32 of a two-part electrical connector 30 electrically connected to battery clips 12 that
16 may be attached to electrodes of a conventional 12 volt battery (not shown), or a
17 rechargeable battery (not shown) such as a lithium rechargeable battery. A cigarette
18 lighter adapter 22 includes the second part 32 of the two-part electrical connector 30
19 electrically connected to a cigarette lighter plug 23 for insertion into a 12-volt car or boat
20 cigarette lighter receptacle (not shown). An AC adapter 24 includes the second part 32 of
21 the two-part electrical connector 30 for converting a 110-240v AC power source to 12
22 volts DC. In one simplified embodiment, the electrical cord terminates at the battery
23 clips 21 and does not include the two-part electrical connector 30 (FIG. 2).

FIG. 3 illustrates the illumination means which are preferably light emitting diodes 13 (LEDs) for the lantern 1. These emit different colors of light which are preferably red, yellow, green, blue, and white. FIGS. 4 -5 illustrate a printed computer board (PCB) 12 to control and program the selection and power to light emitting diodes 13.

The push-button switch 10 along with the PCB 12 activates the illumination means to cycle between various illumination modes, preferably up to 11, such modes including various colors, intensities, flashing or not flashing, and whether the flashing LED turns on to full brightness immediately or ramps up to full brightness from off over a preset period of time. The PCB 12 is programmed to cycle between several light and intensity patterns with each closing of the switch 10.

For example, blue lights and white lights at full power is a program for deep water use, and constitutes a squid attracting function. As such the lantern 1 can be fixed with a light pole of the boat 15 to illuminate the surrounding area. Yellow or white LEDs may be added for a softer or crisper white light. The number of illumination modes is not necessarily limited to those listed herein.

In some embodiments suitable for fishing, the flashing blue and white mode flashes the green and white LEDs at a frequency of between 10 Hz and 50 Hz at between 0.1w to 500w for 12 volt power sources, and 100w to 3,000w for non 12v power sources. Such flashing is preferably split between on and off durations, so that, for example, a 2 Hz

1 cycle will power the blue and white LEDs for 0.25 second., then off for 0.25 seconds,
2 then on for 0.25 seconds, and then off again for 0.25 seconds.

3
4 It has been found that such a flashing pattern is particularly well suited for repelling
5 catfish and attracting squid, with a flashing frequency between 12 Hz and 12.67 Hz
6 having extraordinary results. At about 12 Hz the squid come close enough to facilitate
7 capture, and at about 12.67 Hz catfish are effectively repelled from the area surrounding
8 the lantern 1. The LEDs, when powered, preferably produce between 10 and 240,000
9 lumens. In some embodiments yellow LEDs are included and, when powered, produce
10 between 1,000 and 240,000 lumens. The lantern 1 can be used either when submerged in
11 water or not submerged in water, the switch 10 including a setting for powering the white
12 LEDs and the yellow LEDs when the lantern 1 is not submerged to provide on the order
13 of 1,000 to 10,000 lumens of a warm white light. In some modes, all red, green, blue,
14 and white LEDs are illuminated together.

15
16 In some embodiments the PCB board 12 further includes a wireless circuit to
17 communicate with a wireless network of a mobile phone 45, such as a WiFi or similar
18 network (FIG. 2), or other mobile computer for remote operation, or with a direct
19 wireless connection as with a Bluetooth or similar protocol. The wireless circuit has an
20 antenna 40 electrically connected to the PCB board 12 through the cable 6, the antenna
21 40 being proximate the push button switch and/or two-part electrical connector. An
22 application running on the mobile phone 45 communicates with the wireless circuit of the
23 lantern 1 to cycle between illumination modes, apply varying degrees of power to the

1 LEDs 13, based on LED 13 color or not, apply timed programs of illumination modes
2 and/or LED 13 intensities, and the like.

3
4 While a particular form of the invention has been illustrated and described, it will be
5 apparent that various modifications can be made without departing from the spirit and
6 scope of the invention. For example, the light emitting diodes could be incandescent or
7 other bulbs, additional colored LEDs could be included, and varying patterns of LEDs
8 could be included. Accordingly, it is not intended that the invention be limited, except as
9 by the appended claims.

10
11 Particular terminology used when describing certain features or aspects of the invention
12 should not be taken to imply that the terminology is being redefined herein to be
13 restricted to any specific characteristics, features, or aspects of the invention with which
14 that terminology is associated. In general, the terms used in the following claims should
15 not be construed to limit the invention to the specific embodiments disclosed in the
16 specification, unless the above Detailed Description section explicitly defines such terms.
17 Accordingly, the actual scope of the invention encompasses not only the disclosed
18 embodiments, but also all equivalent ways of practicing or implementing the invention.

19
20 The above detailed description of the embodiments of the invention is not intended to be
21 exhaustive or to limit the invention to the precise form disclosed above or to the
22 particular field of usage mentioned in this disclosure. While specific embodiments of,
23 and examples for, the invention are described above for illustrative purposes, various

1 equivalent modifications are possible within the scope of the invention, as those skilled in
2 the relevant art will recognize. Also, the teachings of the invention provided herein can
3 be applied to other systems, not necessarily the system described above. The elements
4 and acts of the various embodiments described above can be combined to provide further
5 embodiments.

6
7 All of the above patents and applications and other references, including any that may be
8 listed in accompanying filing papers, are incorporated herein by reference. Aspects of
9 the invention can be modified, if necessary, to employ the systems, functions, and
10 concepts of the various references described above to provide yet further embodiments of
11 the invention.

12
13 Changes can be made to the invention in light of the above "Detailed Description."

14 While the above description details certain embodiments of the invention and describes
15 the best mode contemplated, no matter how detailed the above appears in text, the
16 invention can be practiced in many ways. Therefore, implementation details may vary
17 considerably while still being encompassed by the invention disclosed herein. As noted
18 above, particular terminology used when describing certain features or aspects of the
19 invention should not be taken to imply that the terminology is being redefined herein to
20 be restricted to any specific characteristics, features, or aspects of the invention with
21 which that terminology is associated.

1 While certain aspects of the invention are presented below in certain claim forms, the
2 inventor contemplates the various aspects of the invention in any number of claim forms.
3 Accordingly, the inventor reserves the right to add additional claims after filing the
4 application to pursue such additional claim forms for other aspects of the invention.
5
6

1 **CLAIMS**

2
3 What is claimed is:

4
5 1. A lantern for use on a body of water, the lantern comprising:

6 a body having a first and second end, an electrical cable fixed with the first end, a
7 plurality of red LEDs, a plurality of green LEDs, a plurality of blue LEDs, a plurality of
8 white LEDs, a plurality of yellow LEDs, an anchor fixed with the first end, and a float
9 fixed with the second end, the LEDs arranged around the periphery of body;

10 a printed computer board controlling power to the LEDs in a manner to flash a
11 predetermined number of colors at a frequency between 0.1 Hz and 50 Hz at between
12 0.1-5000W; and

13 a switch device integrated with the electrical cable to activate the printed
14 computer board.

15
16 2. The lantern of claim 1 wherein the LEDs, when powered, produce between 10 and
17 240,000 lumens.

18
19 4. The lantern of claim 1 wherein a first part of a two-part electrical connector is fixed to
20 the electrical cable, a second part of the two-part electrical connector being fixed with a
21 power source.

1 5. The lantern of claim 4 wherein the power source is a pair of battery clips fixable with a
2 conventional 12-volt battery.

3
4 6. The lantern of claim 4 wherein the power source is a cigarette lighter plug fixable with
5 a conventional cigarette lighter socket.

6
7 7. The lantern of claim 4 wherein the power source is an AC adapter connectable with a
8 11 0-240V AC power source.

9
10 8. The lantern of claim 4 wherein a switch to activate the illumination means is in
11 proximity to the first part of the two-part electrical connector.

12
13 9. The lantern of claim 1 wherein the switch is a wireless circuit adjacent the first part of
14 the two-part electrical connector to allow remote control of the LEDs.

15
16 10. The lantern of claim 9 wherein the wireless circuit communicates with a wireless
17 network.

18
19 11. The lantern of claim 1 wherein the body is leak sealed using acrylic glue.

1

2 **ABSTRACT OF THE INVENTION**

3

4 A submersible lantern is anchored to the sea floor and kept upright by a float and a
5 countersink weight. The lantern emits multiple patterns of light at specific frequencies,
6 wavelengths, and intensities that repel undesirable sea life while attracting desirable sea
7 life. The lantern has an elongated body, and includes a float and weight to vertically
8 orient the lantern underwater so that it emits light 360 degrees around the lantern body. A
9 push button switch along with a PCB board cycles the lights and power level to the lights
10 based on the particular application. A wireless circuit is used for remote operation via a
11 mobile phone or other wireless device. The lantern can be used both in the sea and on
12 land, and includes a two-part power connector to connect to various conventional power
13 sources.

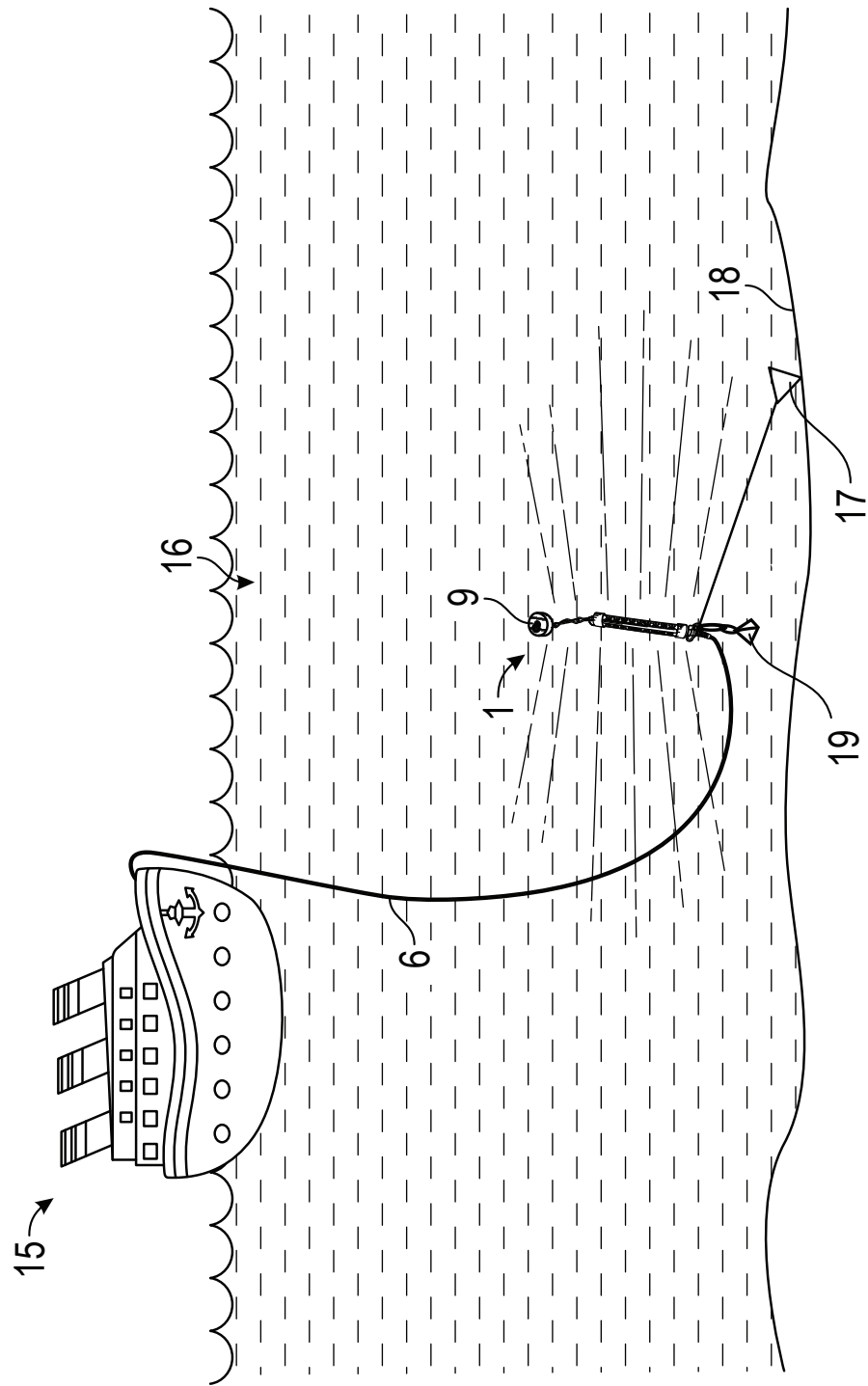


FIG. 1

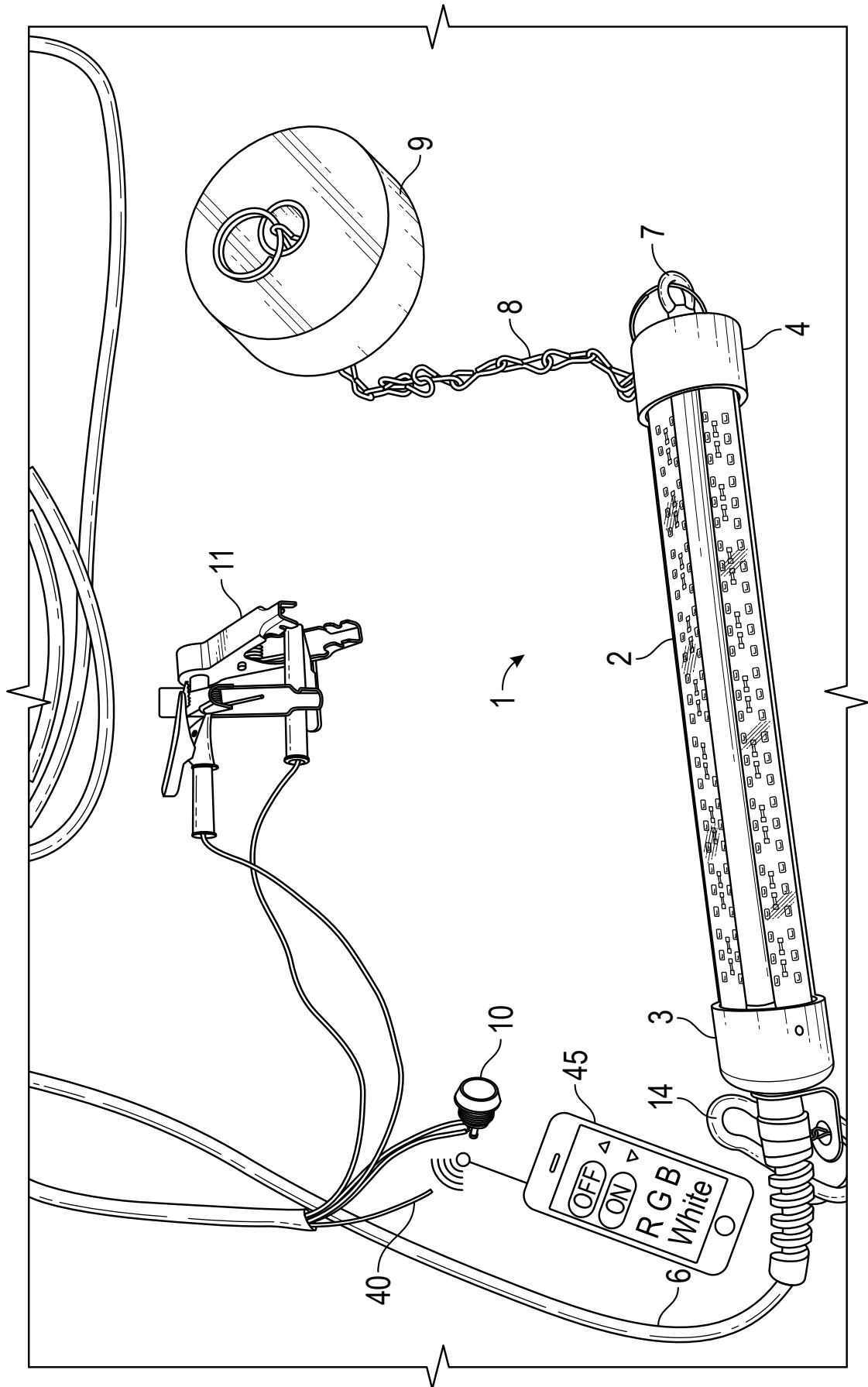


FIG. 2

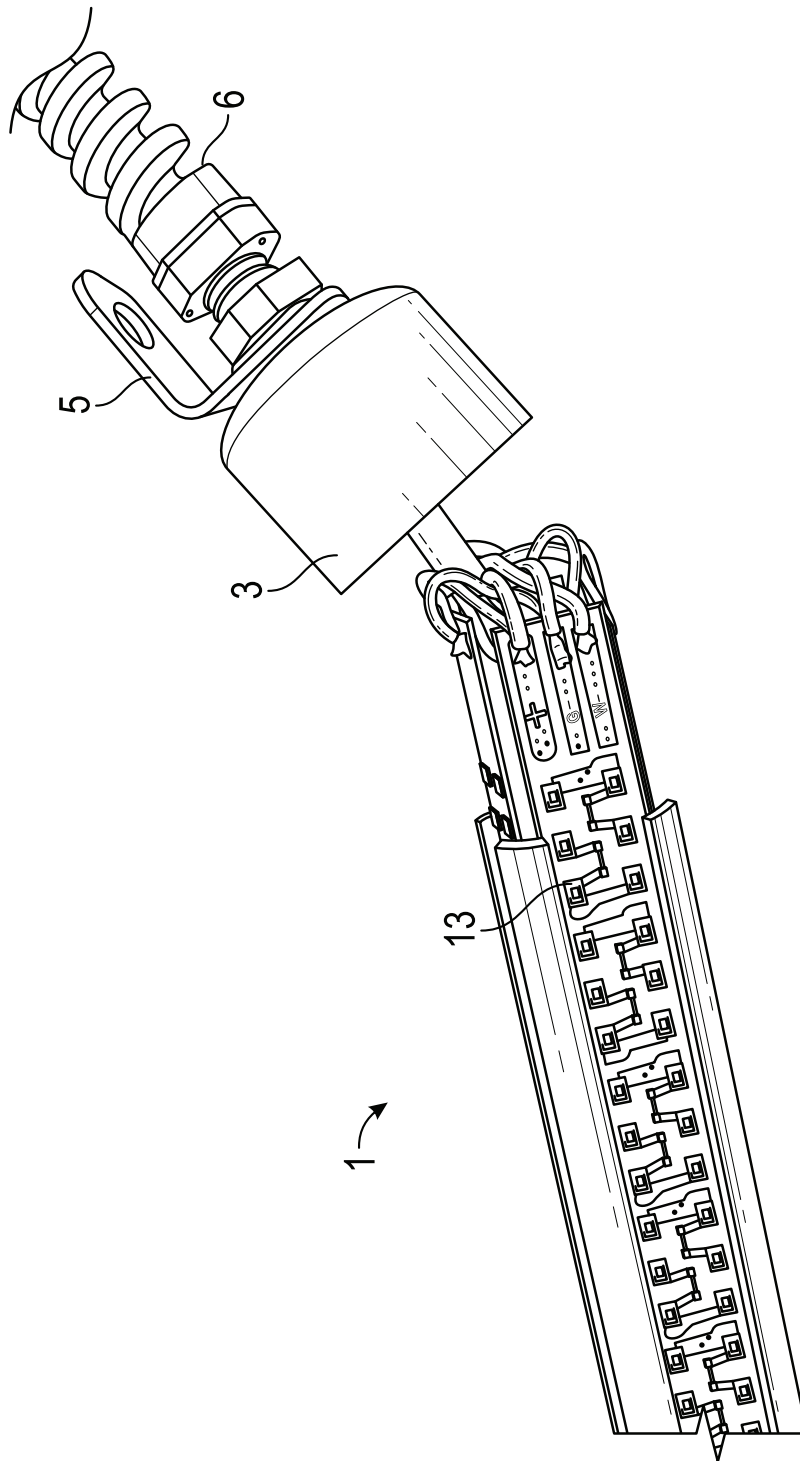


FIG. 3

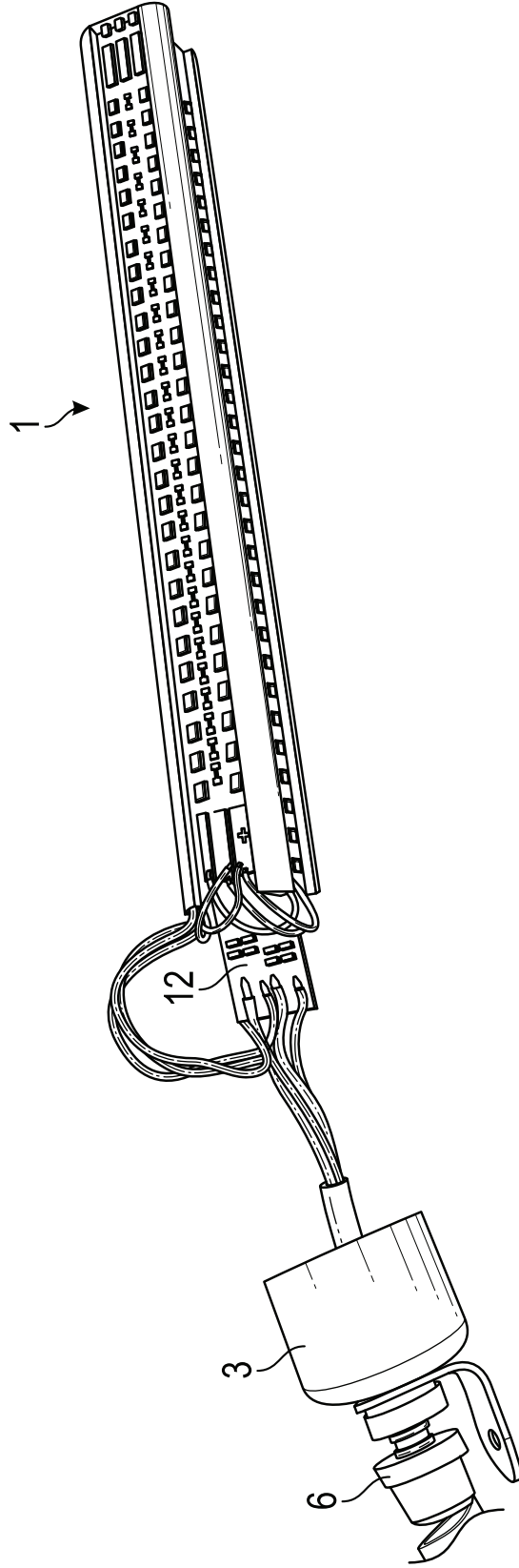


FIG. 4

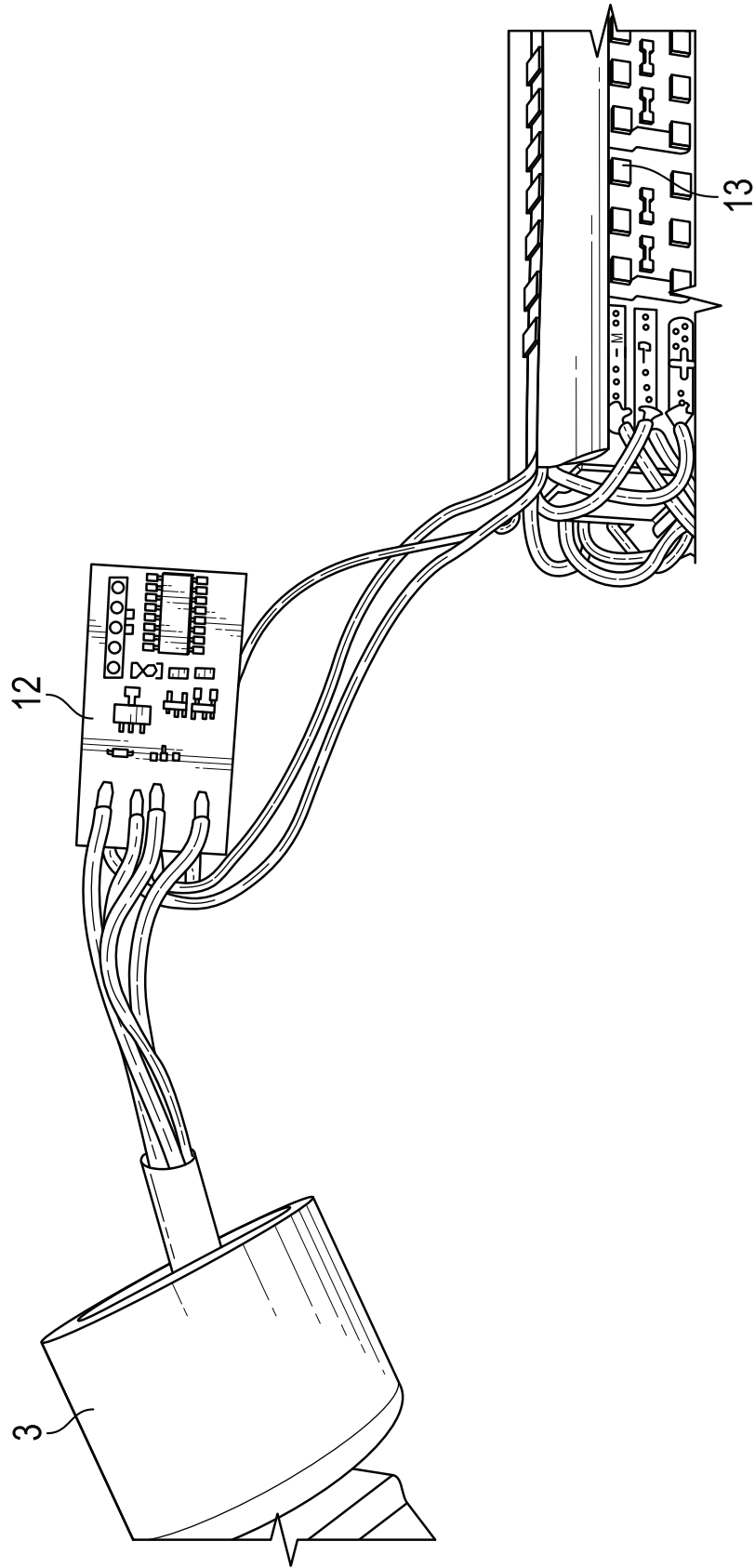


FIG. 5

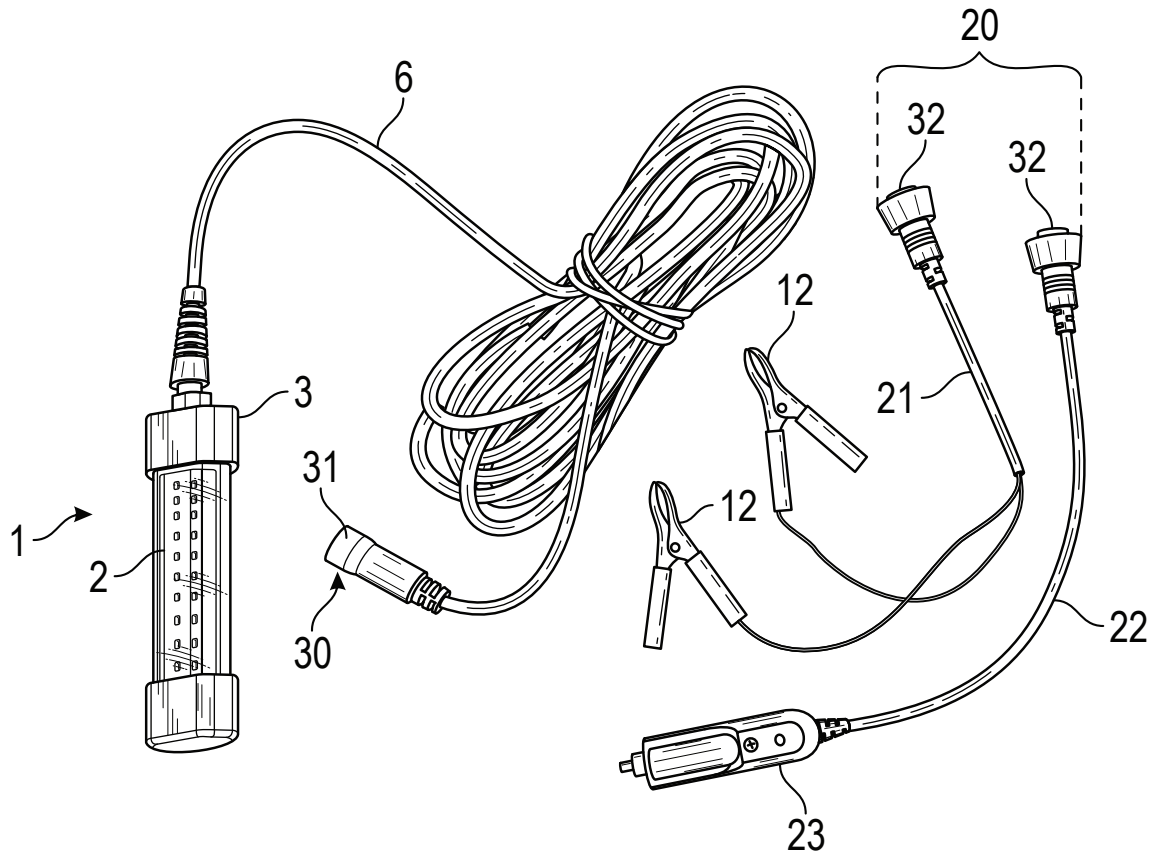


FIG. 6

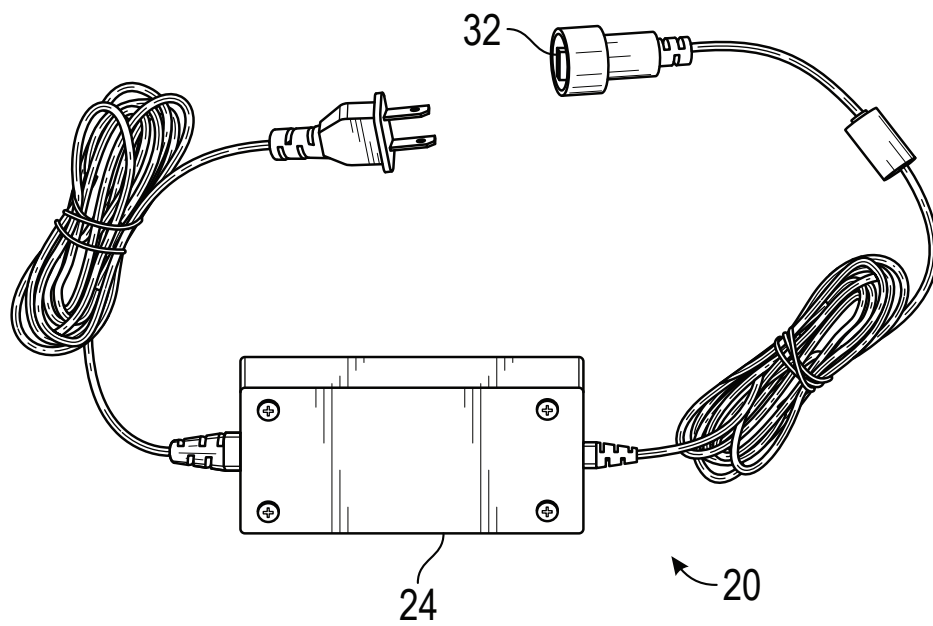


FIG. 7

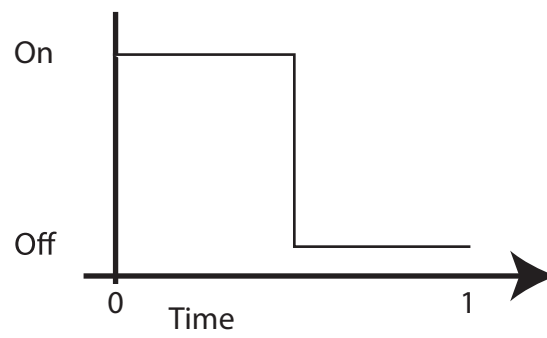


FIG. 8

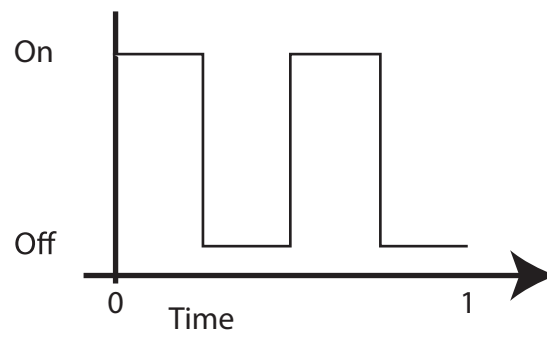


FIG. 9

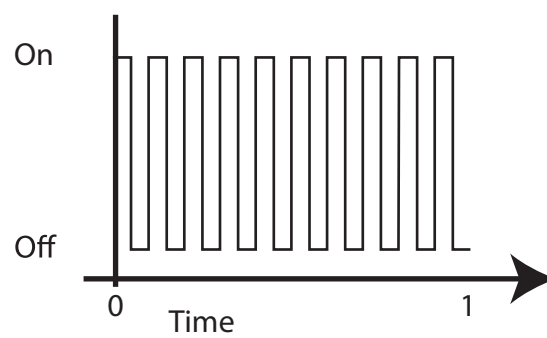


FIG. 10