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McGinnis

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(54) **MARINE VESSELS WITH LIGHT SYSTEMS AND METHODS THEREOF WITH USER INPUT DEVICE FOR SELECTIVELY EMITTING LIGHT IN THE STARBOARD AND/OR PORT DIRECTION**

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G05G 9/047	(2006.01)
H05B 47/175	(2020.01)

(52) **U.S. Cl.**
CPC ***B63B 45/02*** (2013.01); ***G05G 9/04785*** (2013.01); ***H05B 47/196*** (2024.01)

(58) **Field of Classification Search**
CPC B63B 45/02
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,850,803 A	12/1998	Jones et al.		
6,499,867 B1	12/2002	Neal		
7,021,801 B2 *	4/2006	Mohacsi	F21V 29/70	362/477
7,150,664 B1	12/2006	Uppgard et al.		
7,255,616 B1	8/2007	Caldwell		
7,439,902 B2 *	10/2008	Robertson	G01S 13/04	342/147
7,467,595 B1	12/2008	Lanyi et al.		
8,070,333 B2 *	12/2011	von Wolske	B63B 45/00	362/477
9,645,226 B2 *	5/2017	Scott	B63B 45/02	
10,308,330 B1 *	6/2019	Spivak	F21V 21/15	

OTHER PUBLICATIONS

"Understanding ADAS: Adaptive Headlights & How They Work" dated Oct. 6, 2021, accessed from https://caradas.com/understanding-adas-adaptive-headlights/ on Jan. 22, 2025.
"Volvo C40 Pixel Headlight Test" dated Mar. 30, 2022, accessed from https://youtu.be/LNv5XHhPIVk?t=97 on Mar. 12, 2025.
"Volvo Electric Vehicles Pixel LED Headlights" dated Apr. 16, 2023, accessed from https://www.youtube.com/watch?v=s0dpgMb_xcl on Mar. 12, 2025.

* cited by examiner

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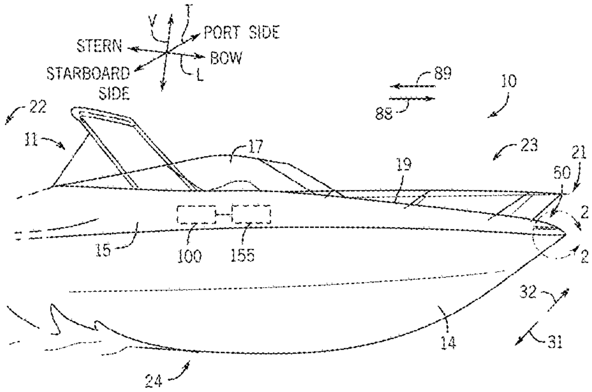
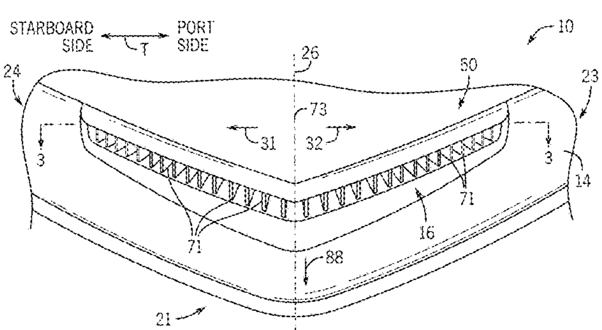
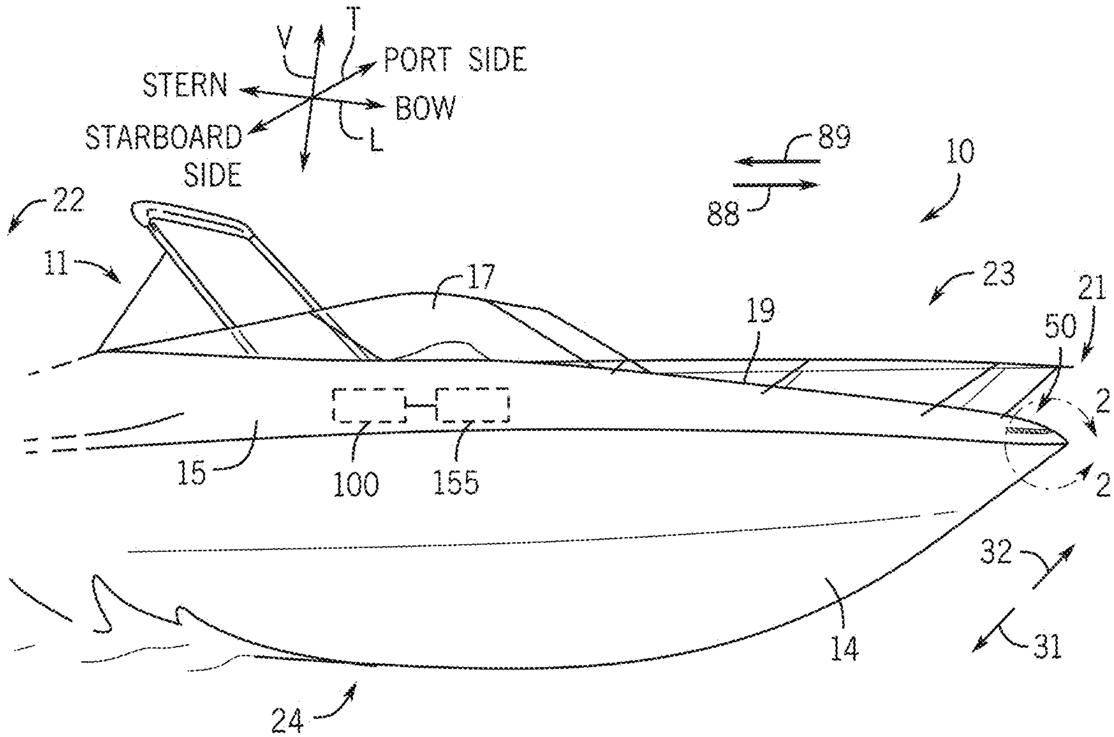
(57) **ABSTRACT**

A marine vessel includes a bow, a stern, a port side, and a starboard side laterally spaced apart from the port side. A light system is coupled to the bow or the stern and operable to emit light in a starboard direction and in a port direction from the bow or the stern. An operator interface device configured to receive an input, and a control system is in communication with the operator interface device and configured to control the light system based on the input such that the light system selectively emits light in the starboard direction and/or the port direction.

20 Claims, 9 Drawing Sheets



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PORT SIDE
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FIG. 1

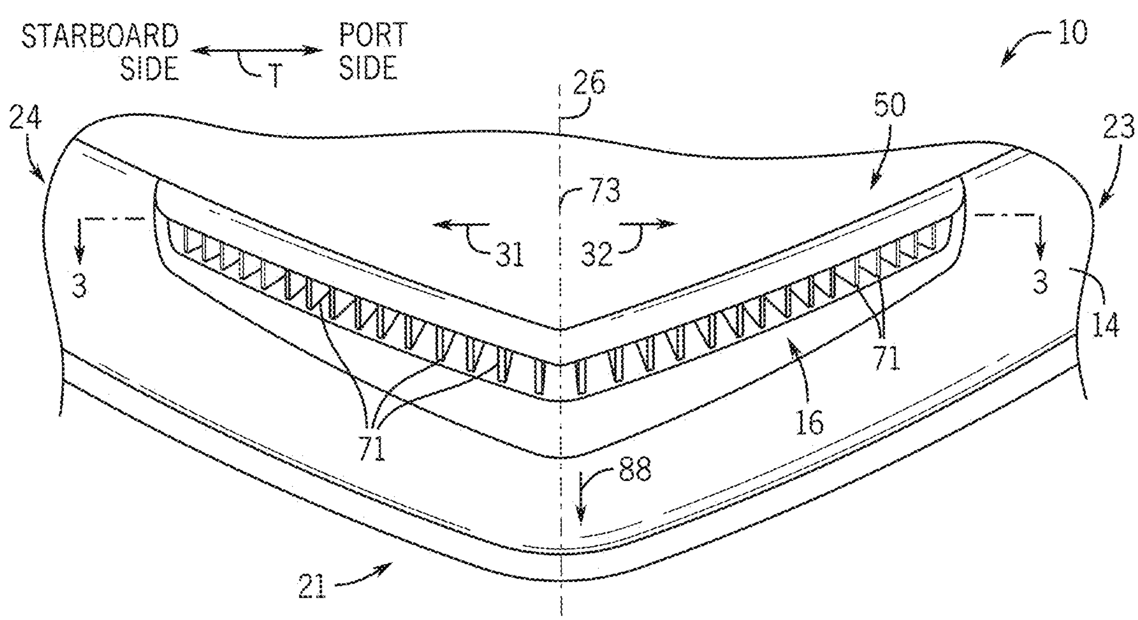
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FIG. 2

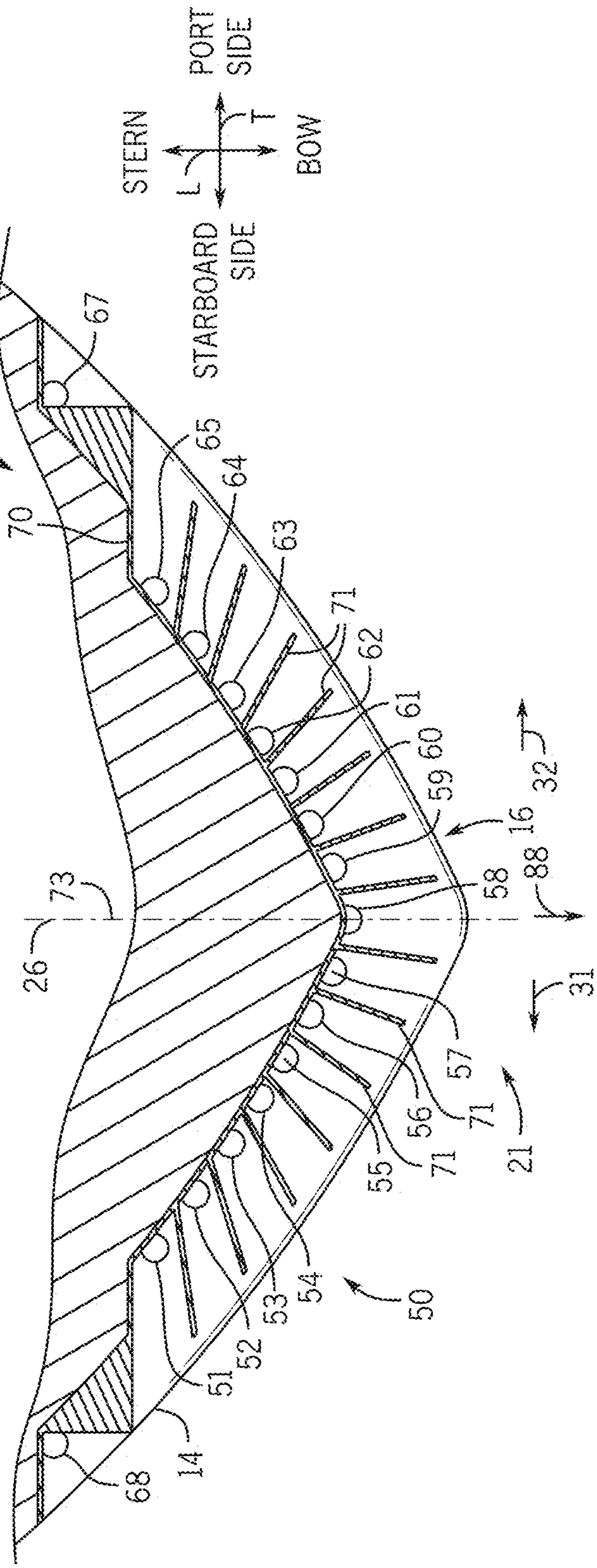
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FIG. 3

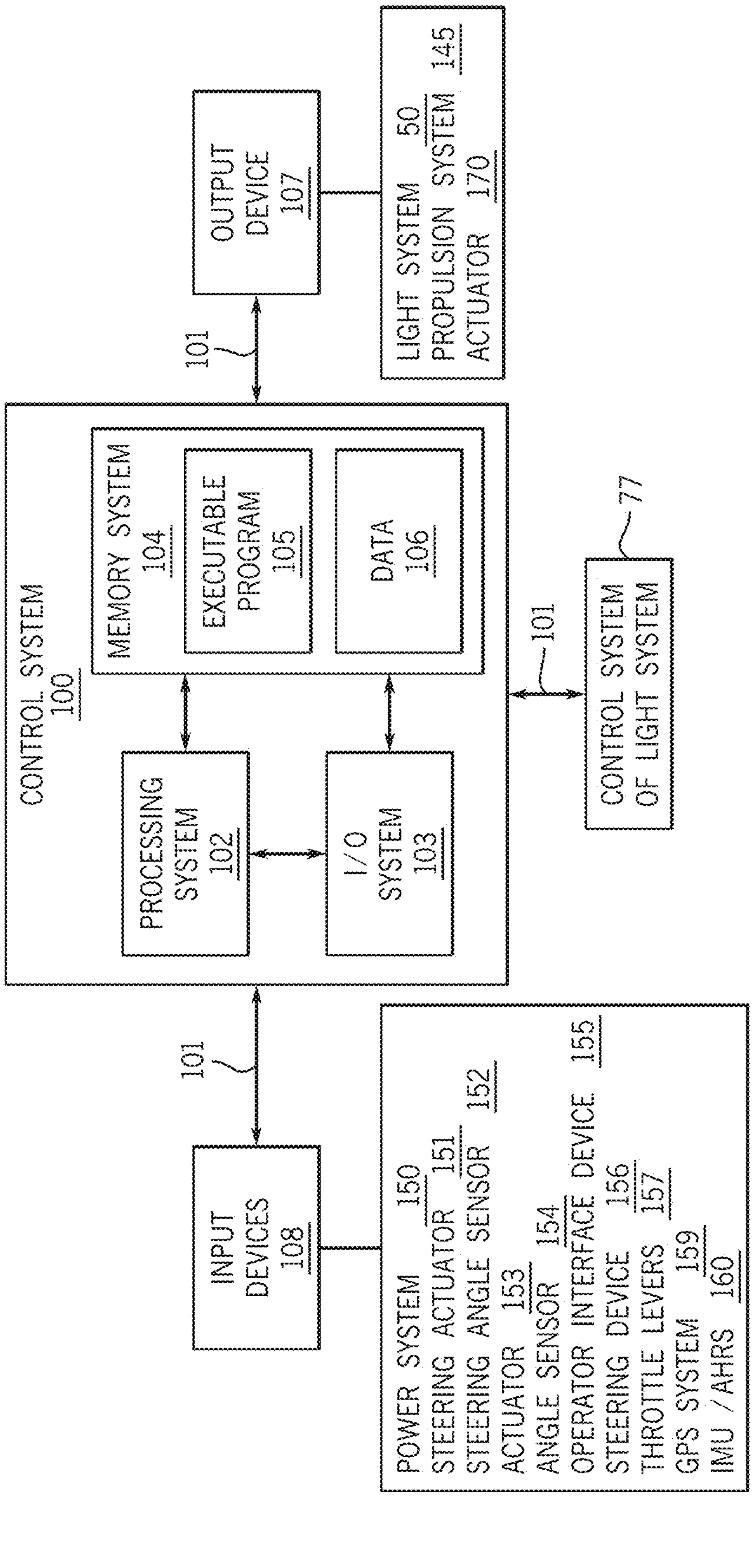
OUTPUT DEVICE 107
LIGHT SYSTEM 50
PROPULSION SYSTEM 145
ACTUATOR 170
101
CONTROL SYSTEM 100
MEMORY SYSTEM 104
EXECUTABLE PROGRAM 105
DATA 106
PROCESSING SYSTEM 102
I/O SYSTEM 103
101
77
CONTROL SYSTEM OF LIGHT SYSTEM
101
INPUT DEVICES 108
POWER SYSTEM 150
STEERING ACTUATOR 151
STEERING ANGLE SENSOR 152
ACTUATOR 153
ANGLE SENSOR 154
OPERATOR INTERFACE DEVICE 155
STEERING DEVICE 156
THROTTLE LEVERS 157
GPS SYSTEM 159
IMU / AHRS 160

FIG. 4

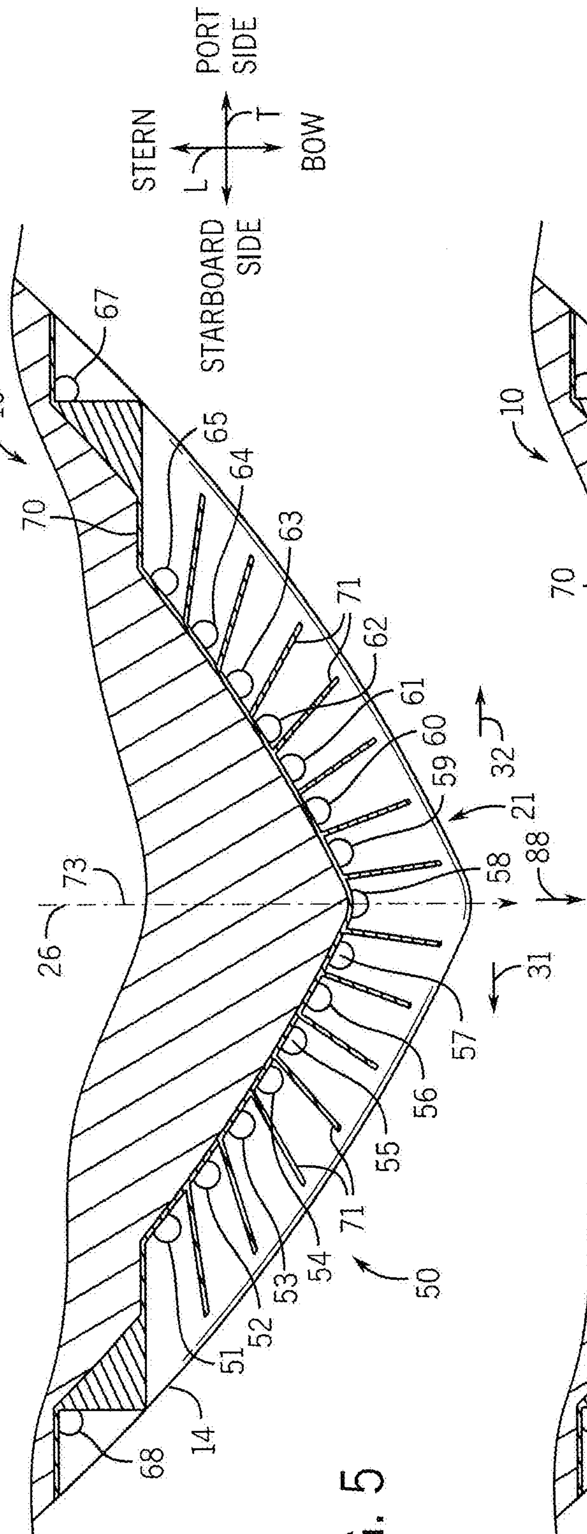
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FIG. 5

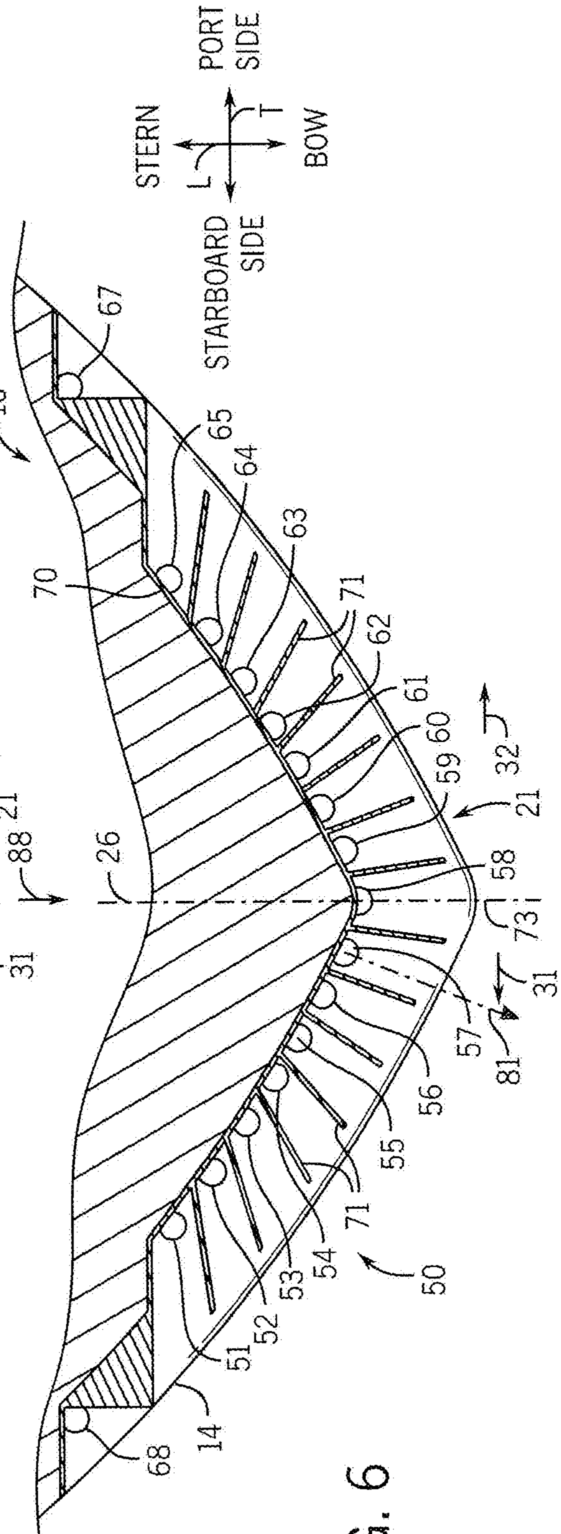
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FIG. 6

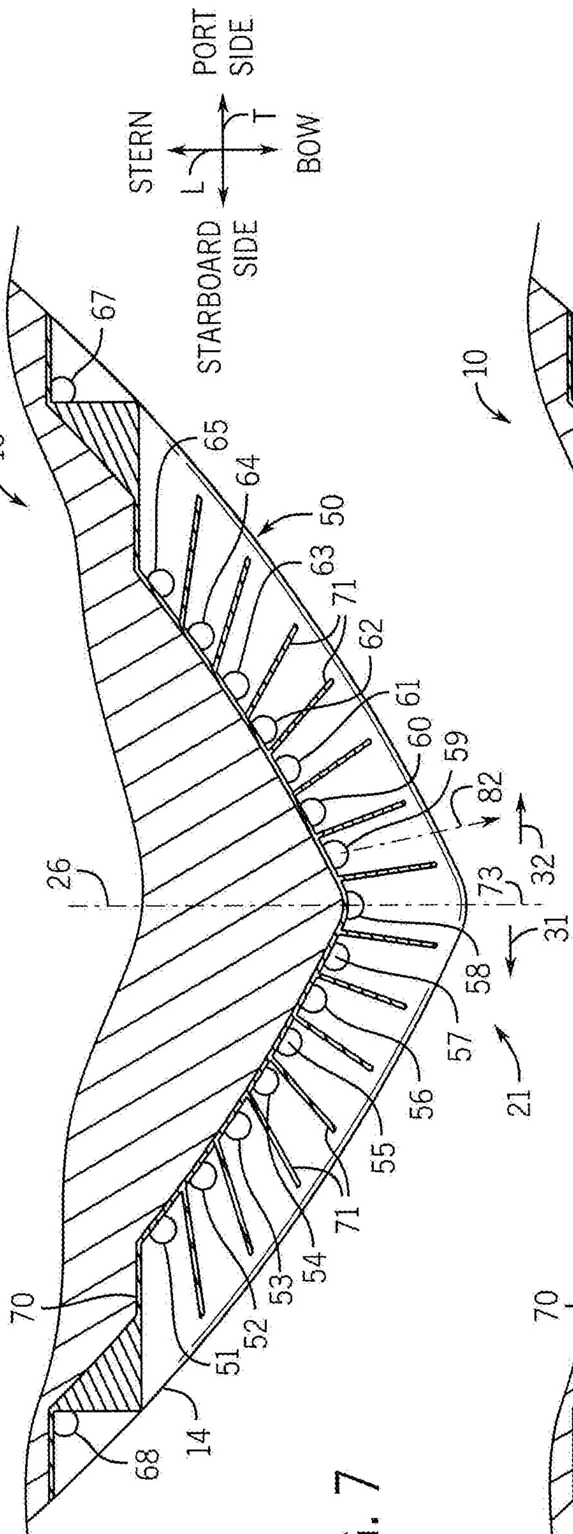
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FIG. 7

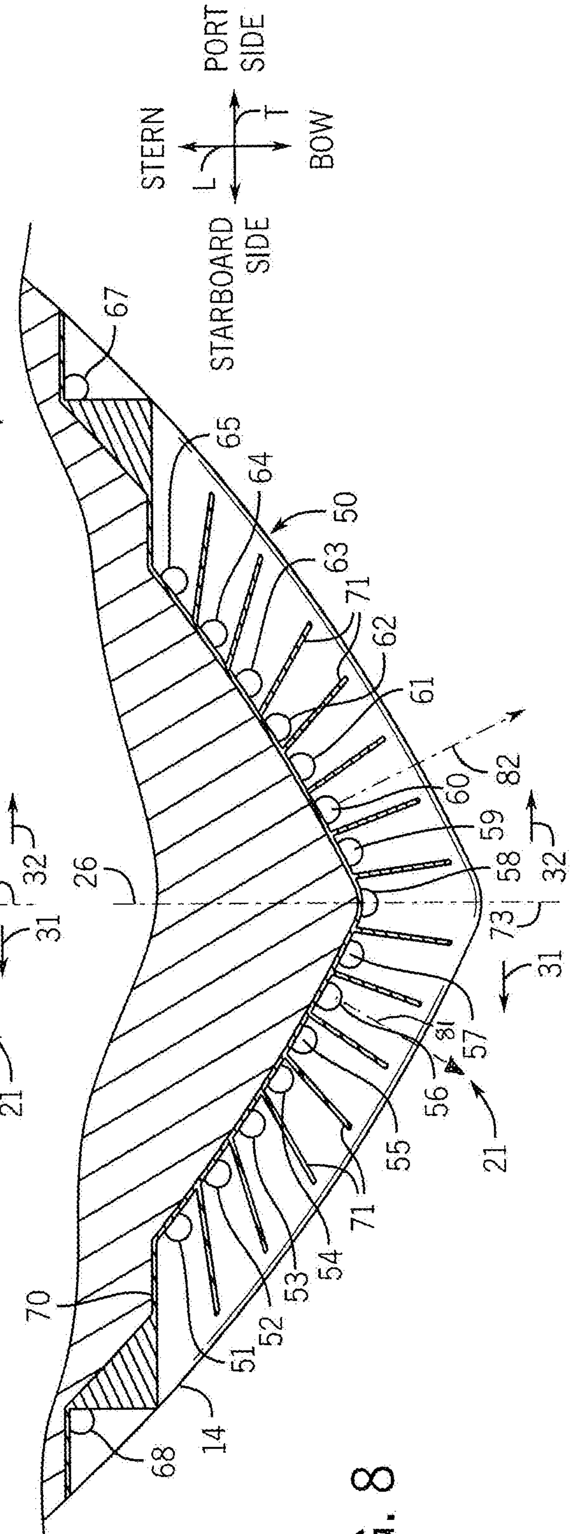
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FIG. 8

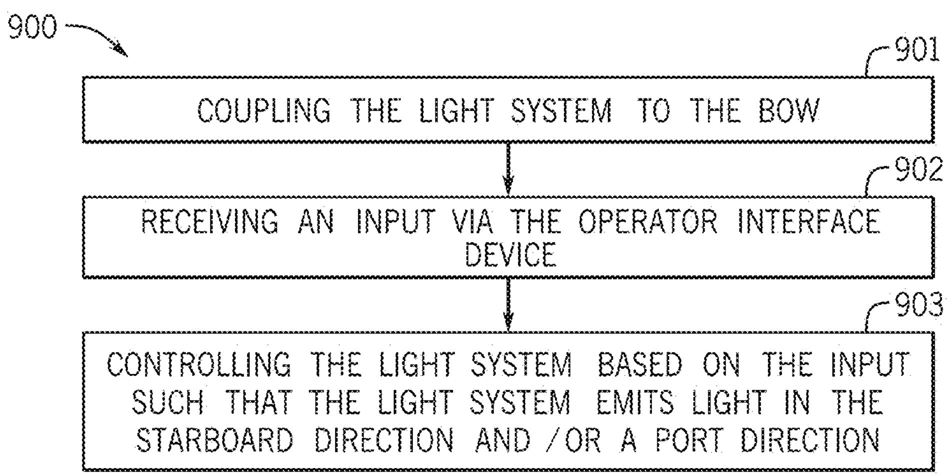
900
901
COUPLING THE LIGHT SYSTEM TO THE BOW
902
RECEIVING AN INPUT VIA THE OPERATOR INTERFACE DEVICE
903
CONTROLLING THE LIGHT SYSTEM BASED ON THE INPUT SUCH THAT THE LIGHT SYSTEM EMITS LIGHT IN THE STARBOARD DIRECTION AND /OR A PORT DIRECTION

FIG. 9

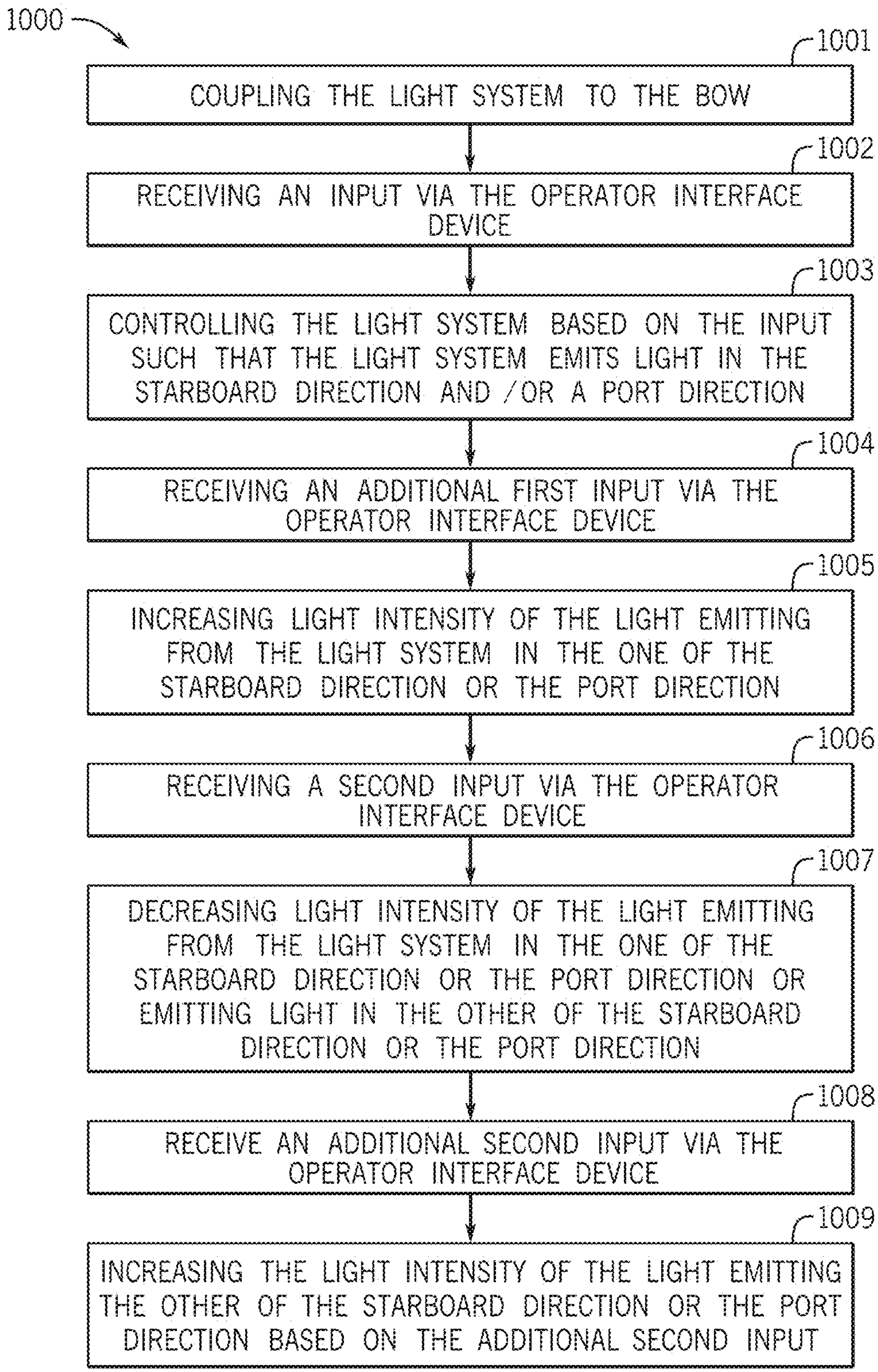
1000
1001
COUPLING THE LIGHT SYSTEM TO THE BOW
1002
RECEIVING AN INPUT VIA THE OPERATOR INTERFACE DEVICE
1003
CONTROLLING THE LIGHT SYSTEM BASED ON THE INPUT SUCH THAT THE LIGHT SYSTEM EMITS LIGHT IN THE STARBOARD DIRECTION AND / OR A PORT DIRECTION
1004
RECEIVING AN ADDITIONAL FIRST INPUT VIA THE OPERATOR INTERFACE DEVICE
1005
INCREASING LIGHT INTENSITY OF THE LIGHT EMITTING FROM THE LIGHT SYSTEM IN THE ONE OF THE STARBOARD DIRECTION OR THE PORT DIRECTION
1006
RECEIVING A SECOND INPUT VIA THE OPERATOR INTERFACE DEVICE
1007
DECREASING LIGHT INTENSITY OF THE LIGHT EMITTING FROM THE LIGHT SYSTEM IN THE ONE OF THE STARBOARD DIRECTION OR THE PORT DIRECTION OR EMITTING LIGHT IN THE OTHER OF THE STARBOARD DIRECTION OR THE PORT DIRECTION
1008
RECEIVE AN ADDITIONAL SECOND INPUT VIA THE OPERATOR INTERFACE DEVICE
1009
INCREASING THE LIGHT INTENSITY OF THE LIGHT EMITTING THE OTHER OF THE STARBOARD DIRECTION OR THE PORT DIRECTION BASED ON THE ADDITIONAL SECOND INPUT

FIG. 10

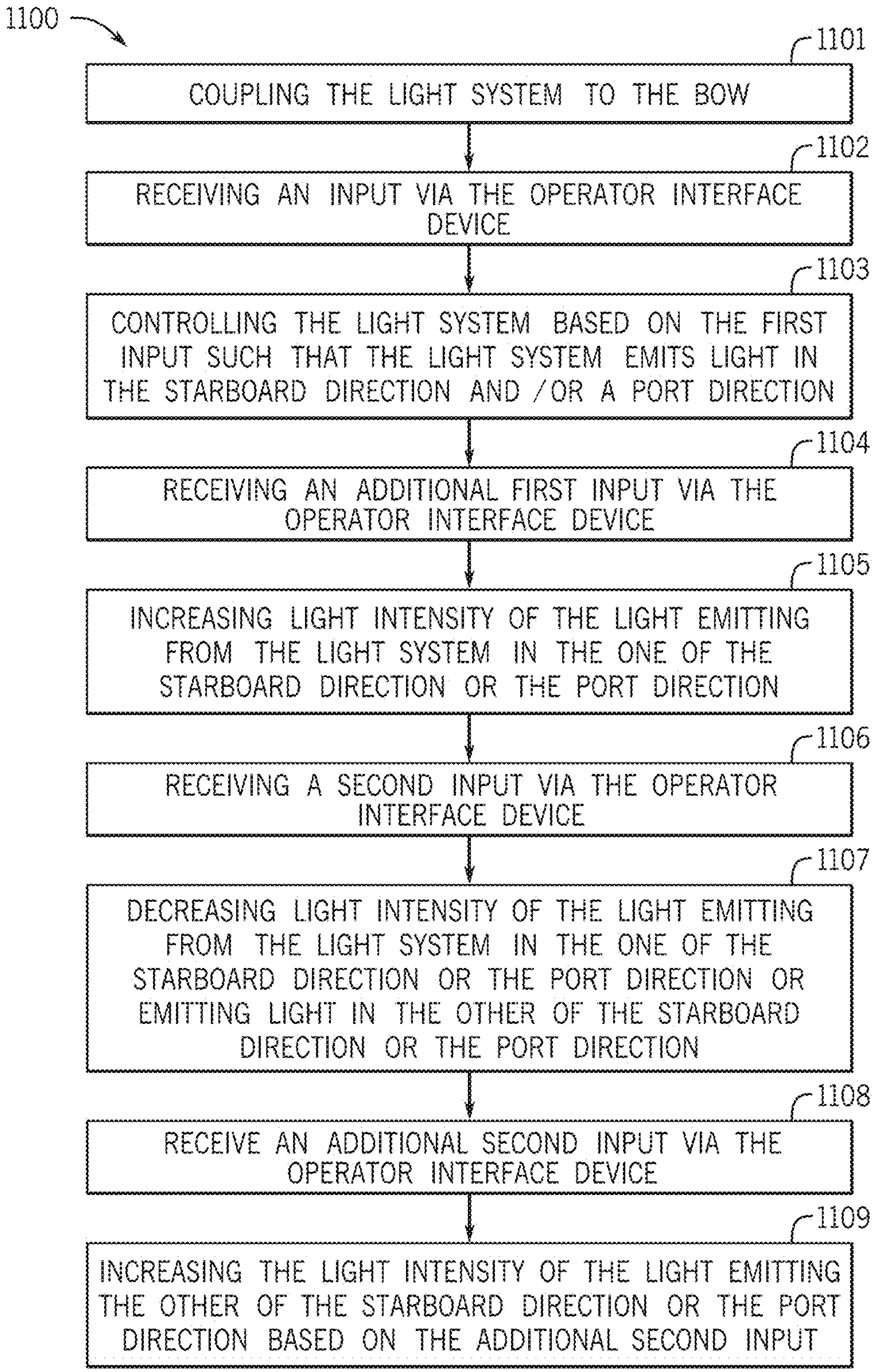
1100
1101
COUPLING THE LIGHT SYSTEM TO THE BOW
1102
RECEIVING AN INPUT VIA THE OPERATOR INTERFACE DEVICE
1103
CONTROLLING THE LIGHT SYSTEM BASED ON THE FIRST INPUT SUCH THAT THE LIGHT SYSTEM EMITS LIGHT IN THE STARBOARD DIRECTION AND /OR A PORT DIRECTION
1104
RECEIVING AN ADDITIONAL FIRST INPUT VIA THE OPERATOR INTERFACE DEVICE
1105
INCREASING LIGHT INTENSITY OF THE LIGHT EMITTING FROM THE LIGHT SYSTEM IN THE ONE OF THE STARBOARD DIRECTION OR THE PORT DIRECTION
1106
RECEIVING A SECOND INPUT VIA THE OPERATOR INTERFACE DEVICE
1107
DECREASING LIGHT INTENSITY OF THE LIGHT EMITTING FROM THE LIGHT SYSTEM IN THE ONE OF THE STARBOARD DIRECTION OR THE PORT DIRECTION OR EMITTING LIGHT IN THE OTHER OF THE STARBOARD DIRECTION OR THE PORT DIRECTION
1108
RECEIVE AN ADDITIONAL SECOND INPUT VIA THE OPERATOR INTERFACE DEVICE
1109
INCREASING THE LIGHT INTENSITY OF THE LIGHT EMITTING THE OTHER OF THE STARBOARD DIRECTION OR THE PORT DIRECTION BASED ON THE ADDITIONAL SECOND INPUT

FIG. 11

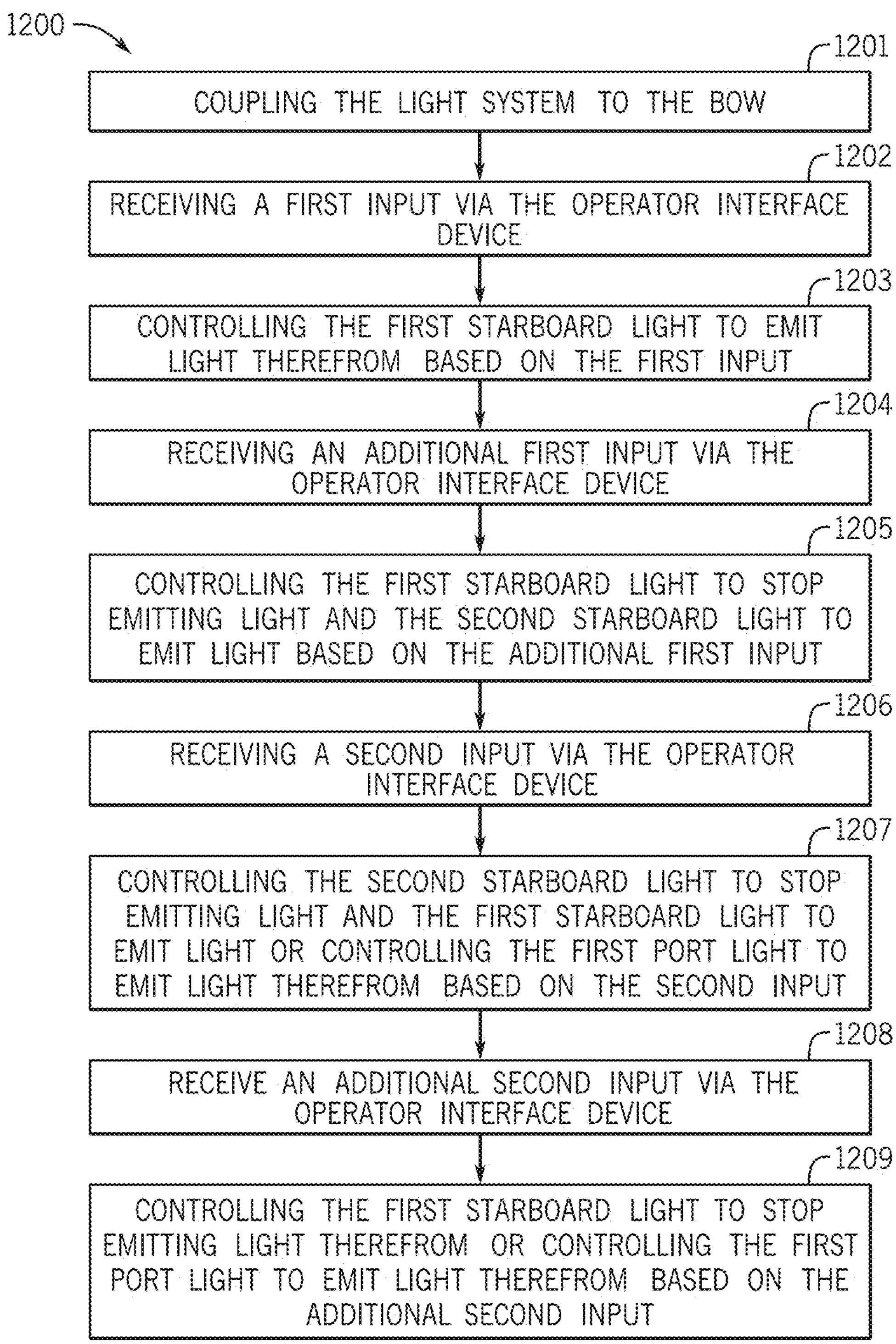
1200
1201
COUPLING THE LIGHT SYSTEM TO THE BOW
1202
RECEIVING A FIRST INPUT VIA THE OPERATOR INTERFACE DEVICE
1203
CONTROLLING THE FIRST STARBOARD LIGHT TO EMIT LIGHT THEREFROM BASED ON THE FIRST INPUT
1204
RECEIVING AN ADDITIONAL FIRST INPUT VIA THE OPERATOR INTERFACE DEVICE
1205
CONTROLLING THE FIRST STARBOARD LIGHT TO STOP EMITTING LIGHT AND THE SECOND STARBOARD LIGHT TO EMIT LIGHT BASED ON THE ADDITIONAL FIRST INPUT
1206
RECEIVING A SECOND INPUT VIA THE OPERATOR INTERFACE DEVICE
1207
CONTROLLING THE SECOND STARBOARD LIGHT TO STOP EMITTING LIGHT AND THE FIRST STARBOARD LIGHT TO EMIT LIGHT OR CONTROLLING THE FIRST PORT LIGHT TO EMIT LIGHT THEREFROM BASED ON THE SECOND INPUT
1208
RECEIVE AN ADDITIONAL SECOND INPUT VIA THE OPERATOR INTERFACE DEVICE
1209
CONTROLLING THE FIRST STARBOARD LIGHT TO STOP EMITTING LIGHT THEREFROM OR CONTROLLING THE FIRST PORT LIGHT TO EMIT LIGHT THEREFROM BASED ON THE ADDITIONAL SECOND INPUT

FIG. 12

MARINE VESSELS WITH LIGHT SYSTEMS AND METHODS THEREOF WITH USER INPUT DEVICE FOR SELECTIVELY EMITTING LIGHT IN THE STARBOARD AND/OR PORT DIRECTION

FIELD

The present disclosure relates to marine vessels, and specifically to marine vessels with light systems.

BACKGROUND

The following U.S. Patent is incorporated herein by reference in entirety.

U.S. Pat. No. 5,850,803 discloses a personal watercraft having a daytime running headlight that illuminates continuously or stroboscopically when the personal watercraft is operating. The daytime running headlight makes the watercraft more noticeable to other boaters. Several embodiments are shown in which one or more daytime running headlights are mounted to the personal watercraft above the deckline of the watercraft and forward of the handlebars of the watercraft.

SUMMARY

This Summary is provided to introduce a selection of concepts that are further described below in the Detailed Description. This Summary is not intended to identify key or essential features of the claimed subject matter, nor is it intended to be used as an aid in limiting the scope of the claimed subject matter.

In certain independent examples, a marine vessel includes a bow, a stern, a port side, and a starboard side laterally spaced apart from the port side. A light system is coupled to the bow or the stern and operable to emit light in a starboard direction and in a port direction from the bow or the stern. An operator interface device configured to receive an input, and a control system is in communication with the operator interface device and configured to control the light system based on the input such that the light system selectively emits light in the starboard direction and/or the port direction.

Optionally a helm is located between the bow and the stern and the operator interface device is located at the helm. Optionally the operator interface device is configured to receive a first input such that the light system emits light in the starboard direction and the operator interface device is configured to receive a second input such that the light system emits light in the port direction. Optionally the operator interface device is a joystick and wherein the first input includes moving the joystick in a first direction and the second input includes moving the joystick in a second direction. Optionally the control system is configured to control the light system based on the input such that the light system selectively emits light in a forward direction or a rear direction. Optionally the light system includes a plurality of lights configured to selectively emit light and a plurality of fins interdigitated with the plurality of lights that are configured to direct the light emitted by the plurality of lights. Optionally the light system includes a frame to which the fins in the plurality of fins are stationarily coupled. Optionally the light system includes a plurality of lights configured to selectively emit light in the starboard direction and/or the port direction, a port navigation light, and a starboard navigation light, and the plurality of lights are spaced apart

from each other and/or positioned between the port navigation light and the starboard navigation light. Optionally the light system has a frame to which the plurality of lights, the starboard navigation light, and the port navigation light are coupled. Optionally the light system is located in a pocket at the bow or the stern.

In certain independent examples, a method for operating a marine vessel having a bow, a stern, a port side, and a starboard side includes coupling a light system at the bow with the light system operable to emit light in a starboard direction and in a port direction from the bow, receiving, with an operator interface device, an input, and controlling, with a control system, the light system based on the input such that the light system selectively emits light in the starboard direction and/or the port direction.

Optionally, the input is a first input such that the light system emits light in the starboard direction or a second input such that the light system emits light in the port direction. Optionally, the input is a first input and the method includes emitting light in one of the starboard direction or the port direction, receiving an additional first input via the operator interface device, and increasing light intensity of the light emitting from the light system in the one of the starboard direction or the port direction based on the additional first input. Optionally, the method includes receiving a second input via the operator interface device, decreasing the light intensity of the light emitting from the light system in the one of the starboard direction or the port direction or emitting light in the other of the starboard direction or the port direction based on the second input. Optionally, the method includes receiving an additional second input via the operator interface device and increasing light intensity of the light emitting in the other of the starboard direction or the port direction based on the additional second input. Optionally, the light system has a plurality of starboard lights and a plurality of port lights and the input is a first input and the method including controlling one of the starboard lights to emit light based on the first input, receiving an additional first input via the operator interface device; and controlling another one of the starboard lights to emit light based on the additional first input. Optionally, the method includes receiving a second input via the operator interface device and controlling one of the starboard lights to stop emitting light therefrom or emitting light from one of the port lights. Optionally, the method includes receiving an additional second input via the operator interface device and controlling another one of the starboard lights to stop emitting light or emitting light from another one of the port lights. Optionally, the light system has a centerline, a plurality of starboard lights each laterally spaced apart from each other in a starboard direction from the centerline, and a plurality of port lights each laterally spaced apart from each other on a port direction from the centerline and the input is a first input, and the method includes controlling a first starboard light of the plurality of starboard lights to emit light therefrom, receiving an additional first input via the operator interface device, controlling the first starboard light to stop emitting light and a second starboard light to emit light therefrom, and the second starboard light is spaced apart in the starboard direction from the centerline more than the first starboard light. Optionally, the method includes receiving a second input via the operator interface device and controlling the second starboard light to stop emitting light and the first starboard light emits light or emitting light from a first port light in the plurality of port lights emits light. Optionally, the method includes receiving an additional second input via the operator interface device and controlling the first starboard light to stop emitting light or emitting light from one of the first port light in the plurality of port lights based on the additional second input.

In certain independent examples, a marine vessel includes a bow, a stern, a port side, and a starboard side laterally spaced apart from the port side. A light system is coupled to the bow and configured to selectively emit light in a starboard direction and/or a port direction from the bow. An operator interface device is configured to receive an input. A control system is in communication with the operator interface device and configured to control the light system based on the input such that the light system emits light in the starboard direction and/or the port direction.

In certain independent examples, a method for operating a marine vessel having a bow, a stern, a port side, and a starboard side includes coupling a light system at the bow that is configured to selectively emit light, receiving, with an operator interface device, an input, and controlling, with a control system, the light system based on the input such that the light system emits light in a starboard direction and/or a port direction from the bow.

Various other features, objects, and advantages will be made apparent from the following description taken together with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The present disclosure is described with reference to the following Figures. The same numbers are used throughout the Figures to reference like features and like components.

FIG. **1** is a perspective view of an example marine vessel according the present disclosure.

FIG. **2** is an enlarged view of an example light system according to the present disclosure at line **2-2** on FIG. **1**.

FIG. **3** is a schematic cross-sectional view of the example light system depicted in FIG. **3**.

FIG. **4** is a schematic diagram of an example control system according to the present disclosure.

FIG. **5** is a view like FIG. **3** with the light system in a first operational mode.

FIG. **6** is a view like FIG. **3** with the light system in a second operational mode.

FIG. **7** is a view like FIG. **3** with the light system in a third operational mode.

FIG. **8** is a view like FIG. **3** with the light system in a fourth operational mode.

FIGS. **9-12** depict different methods for operating the marine vessels and the light systems of the present disclosure.

DETAILED DESCRIPTION

FIG. **1** depicts an example marine vessel **10** according to the present disclosure. The marine vessel **10** longitudinally extends between a bow **21** and a stern **22** (see example longitudinal axis L and longitudinal centerline **26** of the marine vessel **10**) and laterally extends between a port side **23** and a starboard side **24** (see example lateral axis T which is perpendicular to the longitudinal axis L). Note that the lateral axis T and the longitudinal axis L are each also perpendicular to an example axis V, which in certain examples is a vertical axis. The type of marine vessel **10** can vary such as a dual-console boat, a yacht, a fishing boat, a hardtop boat, ski/speed boat, multi-hull boats, catamaran hulls, and the like.

The marine vessel **10** includes a deck (not depicted) on which components of the marine vessel **10** can be placed and

the operator stands. The deck is coupled to a hull **14** to generally form the marine vessel **10**. The deck and the hull **14** can be formed of fiberglass, and in some examples, the deck and/or the hull **14** form a sidewall **15** that at least partially extends along the perimeter of the marine vessel **10**. The sidewall **15** has a gunwale **19**, and a windshield **17** is attached to the gunwale **19** and/or a console (not depicted). The windshield **17** is angled inwardly toward the center of the marine vessel **10**. A helm **11** is located on the deck between the and facilitates operational control of the marine vessel **10** by the operator.

The marine vessel is configured to move within a body of water in a direction instructed by an operator via a steering control system, or by a guidance system configured to automatically control steering of the marine vessel to steer the vessel toward a predetermined location or global position. The marine vessel **1** may be steered in a conventional manner, such as by controlling a marine drive or a rudder via a steering actuator. Additional information regarding exemplary steering actuators is provided in U.S. Pat. Nos. 7,150,664; 7,255,616; and 7,467,595, which are incorporated by reference herein in their entireties.

The marine vessel **10** is propelled through a body of water by a marine propulsion system **145** (FIG. **4**) having one or more marine drives (not depicted) such as outboard motors, inboard motors, stern drives, pod drives, and/or jet drives. The propulsion system can also include sails, oars, pedals, and/or other mechanisms.

The marine drives are connected to a power system **150** that receives energy from one or more energy sources. In the case of a gasoline powered marine drive, the energy is gasoline and the energy source is a fuel tank fluidly connected to the gasoline powered marine drive in a conventional manner. In the case of an electric marine drive, the energy is electrical power supplied from a power storage system. The power storage system stores electrical energy for powering a light system **50** (described herein below), the electric motor, and/or other electrical devices associated with the marine vessel **10** (e.g., HVAC systems, water pumps). The power storage system may be a battery system including one or more batteries or banks of batteries. For example, the power storage system may include one or more lithium-ion (LI) battery cells, lead-acid batteries, fuel cells, flow batteries, ultracapacitors, and/or other devices capable of storing and outputting electric energy.

The marine vessel **10** also includes a light system **50** according to the present disclosure for emitting light to illuminate areas located outside and around the marine vessel **10**. The present inventor recognized that illuminating areas around marine vessels may be important for several reasons. For example, when operating a marine vessel during dusk, dawn, and/or night, it may be necessary to illuminate areas around the marine vessel to ensure safe navigation, visualize channel markers, and/or avoid hazards in the water and/or communicate with other marine vessels and persons (e.g., communicate distress situations such as SOS, locate members in a group excursion).

The present inventor also recognized that conventional lights and/or lighting systems have problems and limitations when attempting to illuminate areas around the marine vessel. For example, some conventional marine vessels have spotlights which are hardtop-mounted or windshield-mounted and manually operated by the operator to illuminate different areas around the marine vessel. These example conventional spotlights may disadvantageously require manual operation thereby requiring the operator remove their hand(s) from other control devices (e.g., steering wheel, throttle lever) and/or may be limited in amount and/or range of illumination provided due to size constraints (e.g., the conventional spotlights cannot be so large so as to obstruct the operator's vision). Furthermore, conventional spotlights mounted on structures on the marine vessel (e.g., hardtops, towers) emit light that may be reflected by other parts of the marine vessel (e.g., the windshield, stainless steel trim pieces) back at the operator thereby reducing the amount of light directed to the area to be illuminated, decreasing the vision of the operator, and/or temporarily blinding the operator.

The present inventor also recognized that conventional lights and/or lighting system may disadvantageously emit light in several areas around the marine vessel including the areas the operator wishes to illuminate and areas the operator may not wish to illuminate. Not being able to control the areas which are illuminated by conventional lights or lighting systems increases the amount of energy consumed by the conventional lights or lighting systems thereby decreasing power efficiency and/or effectiveness which can be especially important on marine vessels which are electrically powered without internal combustion engines or drives.

As such, the present inventors developed the light systems **50** of the present disclosure which are new, solve problems of conventional light systems, and include improvements over conventional lights and light systems.

The light system **50** is configured to emit light to thereby illuminate areas around the marine vessel **10** by emitting light in different directions based on one or more inputs received from the operator via an operator interface device **155** (described further herein). Example operations of the light system **50** are described in greater detail herein below.

The light system **50** is positioned at the bow **21**, and accordingly, the light emitted by the light system **50** is not reflected back toward the operator by components (e.g., railings) of the marine vessel **10**. The light system **50** is located at the bow **21** such that the lighting system **50** can emit light one or more directions (described further herein).

Note that the light system **50** can be position at any location on the marine vessel **10** to thereby avoid the disadvantages or problems described above with respect to conventional lights. For example, the example light systems **50** described herein are generally described as positioned forward of the helm **11** at the bow **21**, the light system **50** could be positioned at the stern **22**. In these examples, the light system **50** positioned at the stern **22** could be positioned such that the light emitted by the light system **50** is not reflected back toward the operator by components (e.g., railings, powerhead of the motor) of the marine vessel **10**. It should be understood that the light system **50** positioned at the stern **22** can include any of the features or components described herein with respect to the light system **50** positioned at the bow **21** and that any directional features described with respect to the light system **50** at the bow **21** may be mirrored, reversed, or inverted for a light system **50** positioned at the stern **22**. For instance, while the light system **50** positioned at the bow **21** could be configured to emit light in a longitudinal or forward direction (see arrow **88** on FIG. **1**) away from the bow **21**, a light system **50** positioned at the stern **22** could be configured to emit light in a rear direction (see arrow **89** on FIG. **1**) away from the stern **22**.

In the example depicted in FIGS. **1-2**, the light system **50** is recessed in a pocket **16** defined by the hull **14** at the bow **21**. In other examples, the light system **50** can be surface mounted to or recessed to the hull **14**, the sidewall **15**, and/or the gunwale **19**.

Referring now to FIG. **3**, an example light system **50** of the present disclosure is depicted in greater detail. The light system **50** includes a plurality of lights **51-65** which are each configured to emit light. The lights **51-65** can be any suitable device for emitting light, such as incandescent bulbs, light emitting diodes (LEDs), florescent lights, halogen lights, and/or the like. The lights **51-65** are configured to emit light in one or more directions. For instance, a center light **58** is configured to emit light in a generally forward direction from the bow **21**, starboard lights **51-57** are configured to emit light in a generally starboard direction, and port lights **59-65** are configured to emit light in a generally port direction. In certain examples, the lights **51-65** are mounted to a frame **70**. The lights **51-65** are spaced apart from each other in a suitable pattern such that the light system **50** can emit light in multiple directions. In other examples, the lights **51-65** are separated into more than one grouping of lights with gaps or voids between the groupings (e.g., the starboard lights **51-57** and a center light **58** are on the same frame **70** and there is a gap are between the starboard lights **51-57** and the center light **58**) or the groupings of lights are separated from the other grouping of lights (e.g., the starboard lights **51-57** is on a first frame separated and spaced apart from the port lights **59-65** which are one a second frame and the center light **58** is spaced apart and between the starboard lights **51-57** and the port lights **59-65**). In certain examples, the frame **70** is coupled to the hull **14**, the deck, and/or the sidewall **15**. In certain examples, the lights **51-65** are capable of emitting different amounts light therefrom (e.g., the center light **58** may emit 25% of the maximum amount of light the center light **58** is capable of emitting) such that the light intensity of the light emitting from the light, the light system **50**, or a portion of the light system can vary. In certain examples, the light system **50** includes a vertically stacked plurality of lights.

In certain examples, fins **71** are positioned between adjacent lights **51-65** and are configured to focus and/or direct light emitted from a light **51-65** located between two fins **71** in a specific direction. In certain examples, the fins **71** are coupled to the frame **70** such that the fins **71** do not move relative to each other and/or are stationary. In other examples, the fins **71** are each movable (e.g., pivotable) about an axis such that the fins **71** can independently move or move together to direct light emitted by the lights **51-65** in various directions. The fins **71** are moved by one or more actuators **170** (see FIG. **4**; e.g., linear actuators, pneumatic or hydraulic cylinders). In certain examples, the plurality of fins **71** are interdigitated with the plurality of lights **51-65** such that the fins **71** direct, focus, and/or concentrate the light emitted by the lights **51-65** in various directions. In certain examples, the light system **50** includes a reflector (not depicted) that is movable to direct and/or concentrate light emitting for one or more of the lights **51-65**.

The fins **71**, the frame **70**, and/or the hull **14** can be coated with a reflective material that reflects the light away from the marine vessel **10**. In certain examples, a lens (not depicted) is included at front of the light system **50** to diffuse the light and/or prevent light 'hot spots' as the light is emitted through the lens. The lens would also protect the lights **51-65** from debris and/or moisture.

In certain examples, the light system **50** includes a centerline **73** and a center light **58** is located on the centerline **73**. In certain instances, the centerline **73** of the light system **50** is aligned on the centerline **26** of the marine vessel **10**. The center light **58** The other lights **51-57**, **59-65** are spaced apart from the centerline **73** in either a starboard direction **31** that generally extends away from the centerline **73** toward the starboard side **24** or a port direction **32** that generally extends away from the centerline **73** toward the port side **23**. The lights **51-57** that are located in the starboard direction **31** from the center light **58** can be referred to as starboard lights **51-57** herein, and the lights **59-65** that are located in the port direction **32** from the center light **58** can be referred to as port lights **59-65** herein. The lights **51-58** can form an arch shape, as depicted in FIG. **5**. Note that in other examples the center light **58** may be excluded such that the lights **57**, **59** would operate together to direct light in the forward direction **88**.

The light system **50** can optionally include navigation lights such as a port navigation light **67** and a starboard navigation light **68**. The port navigation light **67** emits red light and is oriented in a direction away from the port side **23**, and the starboard navigation light **68** emits green light and is oriented in a direction toward the starboard side **24**. In certain examples, the lights **51-65** are positioned between the navigation lights **67**, **68**. The navigation lights **67**, **68** may conform to government regulations set forth by the US Coast Guard such as ABYC standards.

The light system **50** is in communication with a control system **100** (see FIG. **4**) of the marine vessel **10** that is configured to control the operation of various components and/or systems of the marine vessel **10** including the light system **50** (described further herein). Note that in other examples, the light system **50** includes its own control system **77** that is independent from the control system **100** of the marine vessel **10** and/or communicates with the control system **100** of the marine vessel **10**. In these examples, the control system of the light system **50** can include any of the features and/or components of the control system **100** described herein. In certain examples, the light system **50** can be retrofitted onto an existing marine vessel such as mounted to the hull or deck or integrated onto a forward side bow rail.

The control system **100** is in communication with the power system **150** such that the control system **100** can selectively direct power from the power system **150** to the light system **50**. The control system **100** is also in communication with one or more operator interface devices **155** which are configured to display information for the operator, as well as to receive input commands relating to steering, thrust, lighting, and/or other functions of the marine vessel **10**. This includes the programming of destinations and waypoints for autopiloting. In one non-limiting example, the operator interface devices **155** may be a multi-functional display device permitting touch-screen inputs from the user. The operator interface devices **155** can include display screens, touchscreens, speakers, buzzers, visual indicators, vibration devices, keyboards, trackpads, roller balls, joysticks, dials, switches, toggles, voice-command receiving devices, gesture sensing control devices, and/or the like. In certain examples, the operator interface devices **155** may be, for example, part of an onboard management system, such as the VesselView™ by Mercury Marine of Fond du Lac, Wisconsin. The operator interface device **155** can be located at any location on the marine vessel **10**. In certain examples, the operator interface device **155** is located at the helm **11** (FIG. **1**). In other examples, the operator interface device **155** is capable to sensing operator gestures (e.g., head turns toward or way from the port side or the starboard side or points in a certain direction) which are interpreted by the control system **100** as operator inputs. In these examples, the control system **100** automatically adjusts operation of the light system **50** (e.g., lights are illuminated in the direction the operator's head turns or the direction in which the operator pointed). In certain examples, the marine vessel **10** includes more than one operator interface device **155** that can receive inputs from the operator at different locations on the marine vessel **10**.

Additionally or alternatively, the operator interface device **155** is an external device, such as a personal tablet, remote control, or cellular smartphone, which wirelessly communicates with the control system **100**, via wireless protocols known in the art (e.g., cellular data network, Wi-Fi, or Bluetooth®). The user interface device **155** may have a processing system, memory system, and/or input/output (I/O) system in the same manner as other control systems **100** described herein. The processing system may be configured to execute an application stored in the memory system that enables the operator to receive information from the control system **100** relating to the marine vessel **10** more generally and to provide input commands to the control system **100** for controlling the marine vessel **10**. By way of example, the external device may be configured to operate an application such as the "Mercury Marine" App or the VesselView™ Mobile App each provided by Mercury Marine of Fond du Lac, Wisconsin. In each case, the applications allow the operator to receive information and to provide input commands via the external device. In this manner, the external device may also constitute a control system within the control system **100**.

The control system **100** is in communication with other component and/or systems of the marine vessel **10** such as propulsion control modules (PCM), motor controllers, trim controllers, steering controllers, and/or the like. A person of ordinary skill in the art will understand in view of the present disclosure that other control arrangements could be implemented and are within the scope of the present disclosure, and that the control functions described herein may be combined into a single control system or divided into any number of a plurality of distributed control systems that are communicatively connected. In certain embodiments.

Certain examples of the present disclosure are described or depicted as functional and/or logical block components or processing steps, which may be performed by any number of hardware, software, and/or firmware components configured to perform the specified functions. For example, certain embodiments employ integrated circuit components, such as memory elements, digital signal processing elements, logic elements, look-up tables, or the like, configured to carry out a variety of functions under the control of one or more processors or other control devices. The connections between functional and logical block components are merely exemplary, which may be direct or indirect, and may follow alternate pathways.

In certain examples, the control system **100** communicates with each of the one or more system and/or components of the marine vessel **10**, such as the power system **150** and/or the light system **50**, via a communication links **101**, which can be any wired or wireless link. The control system **100** is capable of receiving information and/or controlling one or more operational characteristics of the and its various sub-systems by sending and receiving control signals via the communication links **101**. In one example, the communication link **101** is a controller area network (CAN) bus; however, other types of links could be used. It will be recognized that the extent of connections and the communication links **101** may in fact be one or more shared connections, or links, among some or all of the components of the marine vessel **10**. Moreover, the communication link **101** lines are meant only to demonstrate that the various control elements are capable of communicating with one another, and do not represent actual wiring connections between the various elements, nor do they represent the only paths of communication between the elements. Additionally, the power system **150** and/or the light system **50** may incorporate various types of communication devices and systems, and thus the illustrated communication links **101** may in fact represent various different types of wireless and/or wired data communication systems.

The control system **100** may be a computing system that includes a processing system **102**, memory system **104**, and input/output (I/O) system **103** for communicating with other devices, such as input devices **108** (e.g., operator interface device **155**) and output devices **107** (e.g., lighting system **50**). The processing system **102** loads and executes an executable program **105** from the memory system **104**, accesses data **106** stored within the memory system **104**, and directs the power system **150** and/or the lighting system **50**, and the marine vessel **10** generally to operate as described in further detail below.

The processing system **102** may be implemented as a single microprocessor or other circuitry or be distributed across multiple processing devices or sub-systems that cooperate to execute the executable program **105** from the memory system **104**. Non-limiting examples of the processing system include general purpose central processing units, application specific processors, and logic devices.

The memory system **104** may comprise any storage media readable by the processing system **102** and capable of storing the executable program **105** and/or data **106**. The memory system **104** may be implemented as a single storage device or be distributed across multiple storage devices or sub-systems that cooperate to store computer readable instructions, data structures, program modules, or other data. The memory system **104** may include volatile and/or non-volatile systems and may include removable and/or non-removable media implemented in any method or technology for storage of information. The storage media may include non-transitory and/or transitory storage media, including random access memory, read only memory, magnetic discs, optical discs, flash memory, virtual memory, and non-virtual memory, magnetic storage devices, or any other medium which can be used to store information and be accessed by an instruction execution system, for example.

The light system **50** can be operated by the operator in various manners, and several example operational modes and methods of operation are described herein below. Note that certain steps or features of each example operational mode and/or example method described herein below can be combined with other example operational modes and/or example methods described herein.

FIG. **5** depicts the light system **50** in a first operational mode in which center light **58** emits light (depicted schematically as dash-dot lines) in a forward direction **88** along the centerline **26** from the bow **21** to thereby illuminate the area in front of the bow **21**. In certain examples, that the center light **58** is oriented in the forward direction **88**. The light system **50** in the first operational mode is advantageously utilized when the operator is driving the marine vessel and/or looking in the forward direction **88**.

The light system **50** can be moved to the first operational state by in various manners. The light system **50** can be moved into the first operational mode by turning the light system **50** 'on' or 'off' by entering corresponding inputs into the operator interface device **155**. For instance, the operator may engage a physical or soft switch to selectively allow power from a power source to energize the light system **50**. In another instance, the operator may engage a 'power' icon on the touchscreen panel to move the light system **50** into the first operational mode or power off the light system **50**.

In another example, a daylight sensor (not depicted) senses daylight levels, which are received by the control system **100** to determine whether the measured values are below a predetermined threshold. The control system **100** then sends corresponding command signals to the light system **50** to thereby move the light system **50** into the first operational state. In another example, the operator entered an input into the operator interface device **155** such that the control system **100** controls the light system **50** into the first operational state.

However, there may be situations in which light needs to be directed in other directions. For instance, the operator may laterally look over the port side **23** or the starboard side **24** at the shoreline or other marine vessels. The operator may also laterally look over port side **23** or the starboard side **24** while turning the marine vessel **10**. As such, the light system **50** can include additional operational modes for emitting light in operator-preferred directions.

FIG. **6** depicts the light system **50** in a second operational mode in which the light system **50** emits light (see dash-dot-line **81**) at least partially in the starboard direction **31**. At least one of the starboard lights **51-57**, for instance, the first starboard light **57**, illuminates the area located along the starboard side **24** of the marine vessel **10**. In certain examples, only one of the starboard light **51-57** emits light when the light system **50** is in the second operational mode, however, in other examples, more than one starboard light **51-57** emits light when the light system **50** is in the second operational mode. In certain examples, each starboard light **51-57** is oriented in the starboard direction.

The light system **50** can be moved to the second operational mode by entering an input, such as a first input, via the operator interface device **155**. The control system **100** is in communication with the operator interface device **155** and is configured to control the light system **50** such that the light system **50** is moved to the second operational mode and/or emits light in the starboard direction **31**.

FIG. **7** depicts the light system **50** in a third operational mode in which the light system **50** emits light (see dash-dot-line **82**) in at least partially the port direction **32**. At least one of the port lights **59-65**, for instance the first port light **59** illuminates the area located along the port side **23** of the marine vessel **10**. In certain examples, only one of the port light **59-65** emits light when the light system **50** is in the third operational mode, however, in other examples, more than one port light **59-65** emits light when the light system **50** is in the third operational mode. In certain examples, each starboard light **51-57** is oriented in the starboard direction.

The light system **50** can be moved to the third operational mode by entering an input, such as a second input that is different than the first input, via the operator interface device **155**. The control system **100** is in communication with the operator interface device **155** and is configured to control the light system **50** such that the light system **50** is moved to the third operational mode and/or emit light in the port direction **32**.

FIG. **8** depicts the light system **50** in a fourth operational mode in which the light system **50** emits light (see dash-dot lines **81**, **82**) at least partially in both the starboard direction **31** and the port direction **32**. At least one of the starboard lights **51-59** and at least one of the port lights **59-65**, for instance the second starboard light **56** and the second port light **60** emit light to illuminate the areas located along the starboard side **24** and the port side **23** of the marine vessel **10**. In certain examples, only one of the starboard lights

51-57 and only one of the port lights **59-65** emit light when the light system **50** is in the fourth operational mode, however, in other examples, more than one starboard light **51-57** and more than one port light **59-65** emit light when the light system **50** is in the fourth operational mode.

Note that in certain examples the number of the starboard lights **51-57** and/or the port lights **59-65** that emit light can vary (e.g., four starboard lights **51-53** emit light and three port lights **63-65** emit light based on the inputs (e.g., multiple first inputs and multiple second inputs) received via the operator interface device **155**). In certain examples, the providing additional first inputs via the operator interface device **155** different and/or an increased number of starboard lights **51-57** to emit light independently of the second inputs received via the operator interface device **155**. In certain examples, the providing additional second inputs via the operator interface device **155** different and/or an increased number of port lights **59-65** to emit light independently of the first inputs received via the operator interface device **155**.

The light system **50** can be moved to the fourth operational mode by entering inputs into the operator interface device **155** such that the control system **100** controls the light system **50** to move the light system **50** to the fourth operational mode.

Note that in the examples depicted in FIGS. **6-8**, the center light **58** is depicted not emitting light when the light system **50** is in the second, third, or fourth operational mode. However, in other examples the center light **58** does emit light in the forward direction **88** when the light system **50** is in the second, third, or fourth operational mode. In certain examples, the center light **58** and one or more starboard light **51-57** and/or one or more port lights **59-65** emit light.

Note that the type of first input and/or second input can vary depending on the operator interface device **155**. For example, in embodiments in which the operator interface device **155** is moveable in different directions (physically, via touch screen, etc.) the first input can be moving the operator interface device **155** into a first position or in a first direction and the second input can be moving the operator interface device **155** into a second position or in a second direction different than the first position and first direction, respectively. In instances of the operator interface device **155** including a toggle switch, the control system **100** recognizes signals corresponding to the toggle switch being pivoted into a first toggle position (e.g., the toggle switch is pivoted toward the starboard side **24**) as the first input and the signals corresponding to the toggle switch is pivoted into a second toggle position (e.g., the toggle switch is pivoted toward the port side **23**) as the second input. It should therefore be recognized that the first and second inputs do not necessarily indicate a sequence in which inputs are provided, but rather that these inputs are two different inputs that can be provided. In the instance of the operator interface device **155** including a dial, the control system **100** recognizes signals corresponding to the dial rotated in a clockwise direction as the first input and signals corresponding to the dial rotated in a counter-clockwise direction as a second input. Further inputs may be defined as a function of how far the dial is rotated in either direction. For example, a plurality of inputs may correspond to each 1 degree rotation of the dial in the clockwise direction, as well as each 1 degree rotation of the dial in the counter-clockwise direction. In instances of the operator interface device **155** including a joystick, the control system **100** recognizes signals corresponding to the joystick pivoted in a first joystick direction (e.g., the joystick is pivoted toward the starboard side **24**) as

the first input and signals corresponding to the joystick pivoted in a second joystick direction (e.g., the joystick is pivoted toward the port side **23**) as the second input.

In other examples, the first input is received via an operator interface device **155** having a touchscreen panel (e.g., capacitive touch sensors). For instance, the operator engages the touchscreen panel with their finger to select an indicia (e.g., a virtual "+" symbol) displayed on the panel. The operator interface device **155** relays a corresponding signal to the control system **100** which thereby controls the light system **50** accordingly.

In other examples, the first input is received via an operator interface device **155** capable of sensing operator gestures (e.g., head turns toward or way from the port side or the starboard side or points in a certain direction) and/or verbal commands from the operator. In other examples, the control system **100** is capable of sensing hazards to navigation (e.g., other marine vessel, docks, buoys, tree branches, persons in the water) via one or more sensors (e.g., photo eyes, infrared sensors, lasers, cameras) and further control the light system **50** to automatically emit light toward these hazards. The control system **100** may also track the location of these hazards and thereby adjust the lights that emit light toward the hazard as the marine vessel **10** moves. The control system **100** can be configured to control the light system **50** to emit light in more than one direction as necessary (e.g., the light system **50** emits light in the direction of the next waypoint or point of interest and also emits light in the direction of any hazards that the marine vessel **10** may come upon while moving).

FIG. **9-12** depict methods **900**, **1000**, **1100**, **1200** for operating the marine vessel **10** and/or the light system **50**. The methods **900**, **1000**, **1100**, **1200** may include various steps or features that may alter or modify the operational modes described above. Note that any components noted or described in the methods **900**, **1000**, **1100**, **1200** are depicted in one or more of FIGS. **5-7**.

Referring specifically to FIG. **9**, an example method **900** according to the present disclosure for operating the marine vessel **10** and/or the light system **50** depicted.

The method **900** includes at step **901** coupling the coupling the light system **50** to the bow **21**. The operator interface device **155** receives an input from the operator at step **902**. At step **903**, the control system **100** controls the light system **50** based on the input such that the light system **50** selectively emits light in the starboard direction **31** and/or a port direction **32** from the bow **21**. In one example, when the input is a first input, light system **50** emits light in the starboard direction **31** (see for example FIG. **6**) or when the input is a second input, the light system **50** emits light in the port direction **32** (see for example FIG. **7**).

FIG. **10** depicts another example method **1000** according to the present disclosure for operating the marine vessel **10** and/or the light system **50**. The method **1000** includes at step **1001** coupling the coupling the light system **50** to the bow **21**. The operator interface device **155** receives a first input from the operator at step **1002**. At step **1003**, the control system **100** controls the light system **50** based on the input such that the light system **50** emits light in the starboard direction **31** or a port direction **32** from the bow **21**. An additional first input is received via the operator interface device **155**, at step **1004**, and at step **1005**, the control system **100** increases increasing light intensity of the light emitting from the light system **50** in the one of the starboard direction or the port direction based on the additional first input.

The method **1000** can include, at step **1006**, receiving a second input via the operator interface device **155**. The control system **100**, at step **1007** decreases the light intensity of the light emitting from the light system **50** in the one of the starboard direction **31** or the port direction **32** or emitting light in the other of the starboard direction **31** or the port direction **32** based on the second input. The method **1000** can include, at step **1008**, receiving an additional second input via the operator interface device **155**. The control system **100**, at step **1009**, increases the light intensity of the light emitting the other of the starboard direction or the port direction based on the additional second input.

FIG. **11** depicts another example method **1100** according to the present disclosure for operating the marine vessel **10** and/or the light system **50**. The method **1100** includes at step **1101** coupling the coupling the light system **50** to the bow **21**. The operator interface device **155** receives a first input from the operator at step **1102**. At step **1103**, the control system **100** controls one of the starboard lights (e.g., the first starboard light **57**) to emit light therefrom based on the first input. At step **1104**, the control system **100** receives an additional first input via the operator interface device **155** such that at step **1105** the control system **100** controls another one of the starboard lights (e.g., the second starboard light **56**) to emit light based on the additional first input.

The method **1100** optionally includes at step **1106** receiving a second input via the operator interface device **155**. At step **1107**, the control system **100** controls one of the starboard lights (e.g., the second starboard light **56**) to stop emitting light therefrom or one of the port lights (e.g., the first port light **59**) to emit light therefrom. The method **1100** optionally includes at step **1108** receiving an additional second input via the operator interface device **155**. The control system **100** at step **1109** controls another one of the starboard lights (e.g., the first starboard light **57**) to stop emitting light therefrom or another one of the port lights (e.g., the second port light **60**) to emit light therefrom.

FIG. **12** depicts another example method **1200** according to the present disclosure for operating the marine vessel **10** and/or the light system **50**. The method **1200** includes at step **1201** coupling the coupling the light system **50** to the bow **21**. The operator interface device **155** receives a first input from the operator at step **1202**. At step **1203**, the control system **100** controls one of the starboard lights (e.g., the first starboard light **57**) to emit light therefrom based on the first input. At step **1204**, the control system **100** receives an additional first input via the operator interface device **155**. The control system at step **1505** controls the first starboard light **57** to stop emitting light and another one of the starboard lights (e.g., the second starboard light **56**) to emit light based on the additional first input.

The method **1200** optionally includes at step **1206** receiving a second input via the operator interface device **155**. The control system **100** at step **1207** the second starboard light **56** to stop emitting light and the first starboard light **57** to emit light or controls one of the port lights (e.g., the first port light **59**) to emit light therefrom based on the second input. The method **1200** optionally includes at step **1209** receiving an additional second input via the operator interface device **155**. The control system **100**, at step **1209**, controls the first starboard light **57** to stop emitting light therefrom or controls one port lights (e.g., the first port light **59**) to emit light therefrom based on the additional second input. In other examples, the control system **100** is configured to control the light system **50** such that a grouping of lights (e.g., lights **55-57**, lights **51-57**, lights **51**, **53**, **55**, **57**) emits light.

In certain examples, the control system **100** can be configured to control and/or be in communication with steering actuator **151** (note that additional information regarding exemplary steering actuators is provided in U.S. Pat. Nos. 7,150,664; 7,255,616; and 7,467,595, which are incorporated by reference herein in their entireties) and associated steering angle sensor **152**, and a trim actuator **153** and trim angle sensor **154**, each of which may be conventional. In addition, the control system **100** can be configured control and/or be in communication with a steering device **156**, such as a steering wheel and/or steering joystick, which may be configured to receive operator inputs in a conventional manner, which subsequently may communicate to other systems of the marine vessel **10** to effectuate steering control over the marine vessel **10**. For example, the control system **100** may control steering of one or more marine drives, which is well-known and typically referred to as steer-by-wire arrangements, based on inputs received via the steering device **156**. Other steer arrangements, such as steering cable systems arrangements, are well-known in the art and could alternatively be implemented. One or more throttle levers **157** may be configured to receive operator inputs in a conventional manner (also referred to as receiving a requested speed or a demand request), including both a magnitude and a direction for generating thrust, which may be subsequently communicated with the control system **100**.

In certain examples, steering-related devices, such as the devices noted above, can be considered an operator interface device **155** which receive inputs and/or provide inputs to control system **100** for operating the light system **50**. For instance, the control system **100** can receive inputs from the steering device **156** such that as the steering device is moved in a first direction (e.g., turning at steering wheel in the clockwise direction to thereby turn the marine vessel **10** in the starboard direction) and cause one or more starboard lights **51-57** to emit light thereby illuminating the path the marine vessel **10** is being steered. Similarly, as the steering device is moved in a second direction (e.g., turning at steering wheel in the counterclockwise direction to thereby turn the marine vessel **10** in the port direction) and cause one or more port lights **59-65** to emit light thereby illuminating the path the marine vessel **10** is being steered.

In certain examples, the control system **100** receives inputs from a GPS system **159** configured to determine a current global position of the vessel, track vessel position over time and/or an inertial measurement unit (IMU) or an attitude and heading reference system (AHRS) (collectively shown as the IMU/AHRS **160**) to determine vessel speed and/or direction of travel and to provide this information to the control system **100** which may be utilized to operate the light system **50**. For example, the control system **100** controls the light system **50** to cause the lights **51-65** to emit light when the marine vessel enters an area based on the GPS input (e.g., the control system **100** causes the lights **51-65** to emit light when the marine vessel **10** enters a marina).

In certain examples, the control system **100** receives inputs from sensors configured to sense marine vessel speed. For example, the control system **100** controls the light system **50** to cause the lights **51-65** to emit light when the speed of the marine vessel **10** is above a predetermined speed threshold.

In certain independent examples, a marine vessel includes a bow, a stern, a port side, and a starboard side laterally spaced apart from the port side. A light system is coupled to the bow or the stern and operable to emit light in a starboard direction and in a port direction from the bow or the stern. An operator interface device configured to receive an input, and a control system is in communication with the operator interface device and configured to control the light system based on the input such that the light system selectively emits light in the starboard direction and/or the port direction.

Optionally a helm located between the bow and the stern and the operator interface device is located at the helm. Optionally the operator interface device is configured to receive a first input such that the light system emits light in the starboard direction and the operator interface device is configured to receive a second input such that the light system emits light in the port direction. Optionally the operator interface device is a joystick and wherein the first input includes moving the joystick in a first direction and the second input includes moving the joystick in a second direction. Optionally the control system is configured to control the light system based on the input such that the light system selectively emits light in a forward direction or a rear direction. Optionally the light system includes a plurality of lights configured to selectively emit light and a plurality of fins interdigitated with the plurality of lights that are configured to direct the light emitted by the plurality of lights. Optionally the light system includes a frame to which the fins in the plurality of fins are stationarily coupled. Optionally the light system includes plurality of lights configured to selectively emit light in the starboard direction and/or the port direction, a port navigation light, and a starboard navigation light, and the plurality of lights are spaced apart from each other and positioned between the port navigation light and the starboard navigation light. Optionally the light system has a frame to which the plurality of lights, the starboard navigation light, and the port navigation light are coupled. Optionally the light system is located in a pocket at the bow or the stern.

In certain independent examples, a method for operating a marine vessel having a bow, a stern, a port side, and a starboard side includes coupling a light system at the bow with the light system operable to emit light in a starboard direction and in a port direction from the bow, receiving, with an operator interface device, an input, and controlling, with a control system, the light system based on the input such that the light system selectively emits light in the starboard direction and/or the port direction.

Optionally, the input is a first input such that the light system emits light in the starboard direction or a second input such that the light system emits light in the port direction. Optionally, the input is a first input and the method includes emitting light in one of the starboard direction or the port direction, receiving an additional first input via the operator interface device, and increasing light intensity of the light emitting from the light system in the one of the starboard direction or the port direction based on the additional first input. Optionally, the method includes receiving a second input via the operator interface device, decreasing the light intensity of the light emitting from the light system in the one of the starboard direction or the port direction or emitting light in the other of the starboard direction or the port direction based on the second input. Optionally, the method includes receiving an additional second input via the operator interface device and increasing light intensity of the light emitting in the other of the starboard direction or the port direction based on the additional second input. Optionally, the light system has a plurality of starboard lights and a plurality of port lights and the input is a first input and the method including controlling one of the starboard lights to emit light based on the first input, receiving an additional first input via the operator interface device; and controlling another one of the starboard lights to emit light based on the additional first input. Optionally, the method includes receiving a second input via the operator interface device and controlling one of the starboard lights to stop emitting light therefrom or emitting light from one of the port lights. Optionally, the method includes receiving an additional second input via the operator interface device and controlling another one of the starboard lights to stop emitting light or emitting light from another one of the port lights. Optionally, the light system has centerline, a plurality of starboard lights each laterally spaced apart from each other in a starboard direction from the centerline, and a plurality of port lights each laterally spaced apart from each other on a port direction from the centerline and the input is a first input, and the method includes controlling a first starboard light of the plurality of starboard lights to emit light therefrom, receiving an additional first input via the operator interface device, controlling the first starboard light to stop emitting light and a second starboard light to emit light therefrom, and the second starboard light is spaced apart in the starboard direction from the centerline more than the first starboard light. Optionally, the method includes receiving a second input via the operator interface device and controlling the second starboard light to stop emitting light and the first starboard light emits light or emitting light from a first port light in the plurality of port lights emits light. Optionally, the method includes receiving an additional second input via the operator interface device and controlling the first starboard light to stop emitting light or emitting light from one of the first port light in the plurality of port lights based on the additional second input.

In certain independent examples, a marine vessel includes a bow, a stern, a port side, and a starboard side laterally spaced apart from the port side. A light system is coupled to the bow and operable to emit light in a starboard direction and in a port direction from the bow. An operator interface device is configured to receive an input, and a control system is in communication with the operator interface device and configured to control the light system based on the input such that the light system selectively emits light in the starboard direction and/or the port direction.

Optionally, a helm is located between the bow and the stern and the operator interface device is located at the helm. Optionally, the operator interface device is configured to receive a first input such that the light system emits light in the starboard direction and the operator interface device is configured to receive a second input such that the light system emits light in the port direction. Optionally, the operator interface device is a joystick and the first input includes moving the joystick in a first direction and the second input includes moving the joystick in a second direction. Optionally, the operator interface device is a touchscreen panel configured to receive the first input and/or the second input. Optionally, the light system includes a plurality of lights configured to selectively emit light. Optionally, the light system includes a plurality of fins interdigitated with the plurality of lights that are configured to direct the light emitted by the plurality of lights. Optionally, the light system includes a frame to which the fins in the plurality of fins are stationarily coupled. Optionally, the light system includes a port navigation light and a starboard navigation light, and the plurality of lights are spaced apart from each other and positioned between the port navigation light and the starboard navigation light. Optionally, the light system has a frame to which the plurality of lights, the starboard navigation light, and the port navigation light are coupled. Optionally, the plurality of lights are located in a pocket at the bow.

In certain independent examples, a marine vessel includes a bow, a stern, a port side, and a starboard side laterally spaced apart from the port side. A light system is coupled to the bow and configured to selectively emit light in a starboard direction and/or a port direction from the bow. An operator interface device is configured to receive an input. A control system is in communication with the operator interface device and configured to control the light system based on the input such that the light system emits light in the starboard direction and/or the port direction.

In certain independent examples, a method for operating a marine vessel having a bow, a stern, a port side, and a starboard side includes coupling a light system at the bow that is configured to selectively emit light, receiving, with an operator interface device, an input, and controlling, with a control system, the light system based on the input such that the light system emits light in a starboard direction and/or a port direction from the bow.

Citations to a number of references are made herein. The cited references are incorporated by reference herein in their entireties. In the event that there is an inconsistency between a definition of a term in the specification as compared to a definition of the term in a cited reference, the term should be interpreted based on the definition in the specification.

In the present description, certain terms have been used for brevity, clarity, and understanding. No unnecessary limitations are to be inferred therefrom beyond the requirement of the prior art because such terms are used for descriptive purposes and are intended to be broadly construed. The different apparatuses, systems, and method steps described herein may be used alone or in combination with other apparatuses, systems, and methods. It is to be expected that various equivalents, alternatives, and modifications are possible within the scope of the appended claims.

The functional block diagrams, operational sequences, and flow diagrams provided in the Figures are representative of exemplary architectures, environments, and methodologies for performing novel aspects of the disclosure. While, for purposes of simplicity of explanation, the methodologies included herein may be in the form of a functional diagram, operational sequence, or flow diagram, and may be described as a series of acts, it is to be understood and appreciated that the methodologies are not limited by the order of acts, as some acts may, in accordance therewith, occur in a different order and/or concurrently with other acts from that shown and described herein. For example, those skilled in the art will understand and appreciate that a methodology can alternatively be represented as a series of interrelated states or events, such as in a state diagram. Moreover, not all acts illustrated in a methodology may be required for a novel implementation.

This written description uses examples to disclose the invention and also to enable any person skilled in the art to make and use the invention. The patentable scope of the invention is defined by the claims, and may include other examples that occur to those skilled in the art. Such other examples are intended to be within the scope of the claims if they have structural elements that do not differ from the literal language of the claims, or if they include equivalent structural elements with insubstantial differences from the literal languages of the claims.

What is claimed is:

1. A marine vessel comprising:

a bow, a stern, a port side, and a starboard side;

a light system coupled to the bow or the stern and operable to emit light therefrom;

an operator interface device configured to receive one or more inputs for steering the marine vessel along a path; and

a control system in communication with the operator interface device and configured to control the light system based on the one or more inputs such that the light system illuminates the path by emitting light in a starboard direction, a port direction, a forward direction, and/or a rear direction as the marine vessel is steered along the path.

2. The marine vessel according to claim **1**, wherein the light system includes a plurality of lights with each light in the plurality of lights configured to selectively emit light based on the one or more inputs for steering the marine vessel along the path.

3. The marine vessel according to claim **1**, wherein the operator interface device is configured to receive a first input such that the light system emits light in the starboard direction; and

wherein the operator interface device is configured to receive a second input such that the light system emits light in the port direction.

4. The marine vessel according to claim **3**, wherein the operator interface device is a steering device and wherein the first input includes moving the steering device in a first direction and the second input includes moving the joystick steering device in a second direction.

5. The marine vessel according to claim **1**, wherein the control system is further configured to receive inputs from a GPS system and control the light system to emit light from the light system when the marine vessel enters a select area.

6. The marine vessel according to claim **1**, wherein the light system includes a plurality of lights configured to selectively emit light in the starboard direction and/or the port direction, a port navigation light, and a starboard navigation light, and wherein the plurality of lights are positioned between the port navigation light and the starboard navigation light.

7. The marine vessel according to claim **1**, wherein the light system is located in a pocket at the bow or the stern.

8. A marine vessel comprising:

a bow, a stern, a port side, and a starboard side;

a light system coupled to the bow or the stern and operable to emit light in a starboard direction and/or in a port direction from the bow or the stern;

an operator interface device configured to receive an input; and

a control system in communication with the operator interface device and configured to control the light system based on the input such that the light system selectively emits light in the starboard direction and/or the port direction; and

wherein the light system includes a plurality of lights configured to selectively emit light and a plurality of fins interdigitated with the plurality of lights that are configured to direct the light emitted by the plurality of lights.

9. The marine vessel according to claim **8**, wherein the light system includes a frame to which the fins in the plurality of fins are stationarily coupled.

10. A marine vessel comprising:

a bow, a stern, a port side, and a starboard side;

a light system coupled to the bow or the stern and operable to emit light in a starboard direction and/or in a port direction from the bow or the stern;

an operator interface device configured to receive an input, and a control system in communication with the operator interface device and configured to control the light system based on the input such that the light system selectively emits light in the starboard direction and/or the port direction; and

wherein the light system includes a plurality of lights configured to selectively emit light in the starboard direction and/or the port direction, a port navigation light, and a starboard navigation light, and wherein the plurality of lights are positioned between the port navigation light and the starboard navigation light; and

wherein the light system has a frame to which the plurality of lights, the starboard navigation light, and the port navigation light are coupled.

11. A method for operating a marine vessel having a bow, a stern, a port side, and a starboard side, the method comprising:

coupling a light system at the bow or the stern, the light system operable to emit light therefrom;

receiving, with an operator interface device, one or more inputs for steering the marine vessel along a path; and

controlling, with a control system, the light system based on the one or more inputs such that the light system illuminates the path by emitting light in a starboard direction, the port direction, a forward direction, and/or a rear direction as the marine vessel is steered along the path.

12. The method according to claim **11**, wherein the one of the inputs is a first input such that the light system emits light in the starboard direction or one of the inputs is a second input such that the light system emits light in the port direction.

13. The method according to claim **11**, wherein one of the inputs is a first input, and further comprising:

emitting light in one of the starboard direction or the port direction;

receiving an additional first input via the operator interface device; and

increasing light intensity of the light emitting from the light system in the one of the starboard direction or the port direction based on the additional first input.

14. The method according to claim **13**, further comprising:

receiving a second input via the operator interface device; and

decreasing the light intensity of the light emitting from the light system in the one of the starboard direction or the port direction or emitting light in the other of the starboard direction or the port direction based on the second input.

15. The method according to claim **14**, further comprising:

receiving an additional second input via the operator interface device; and

increasing light intensity of the light emitting in the other of the starboard direction or the port direction based on the additional second input.

16. The method according to claim **11**, wherein the light system has a plurality of starboard lights and a plurality of port lights and one of the inputs is a first input; and further comprising:

controlling one of the starboard lights to emit light based on the first input;

receiving an additional first input via the operator interface device; and

controlling another one of the starboard lights to emit light based on the additional first input.

17. The method according to claim **16**, further comprising:

receiving a second input via the operator interface device; and

controlling one of the starboard lights to stop emitting light therefrom or emitting light from one of the port lights.

18. The method according to claim **17**, further comprising:

receiving an additional second input via the operator interface device; and

controlling another one of the starboard lights to stop emitting light or emitting light from another one of the port lights.

19. The method according to claim **11**, wherein the light system has centerline, a plurality of starboard lights each laterally spaced apart from each other in a starboard direction from the centerline, and a plurality of port lights each laterally spaced apart from each other in a port direction from the centerline; wherein one of the inputs is a first input; and further comprising:

controlling a first starboard light of the plurality of starboard lights to emit light therefrom;

receiving an additional first input via the operator interface device;

controlling the first starboard light to stop emitting light and a second starboard light of the plurality of starboard lights to emit light therefrom; and

wherein the second starboard light is spaced apart in the starboard direction from the centerline more than the first starboard light.

20. The method according to claim **19**, further comprising:

receiving a second input via the operator interface device; and

controlling the second starboard light to stop emitting light and the first starboard light emits light or emitting light from a first port light in the plurality of port lights emits light.

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