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(54) **WATERCRAFT WITH ELECTRIC DRIVE SYSTEM**

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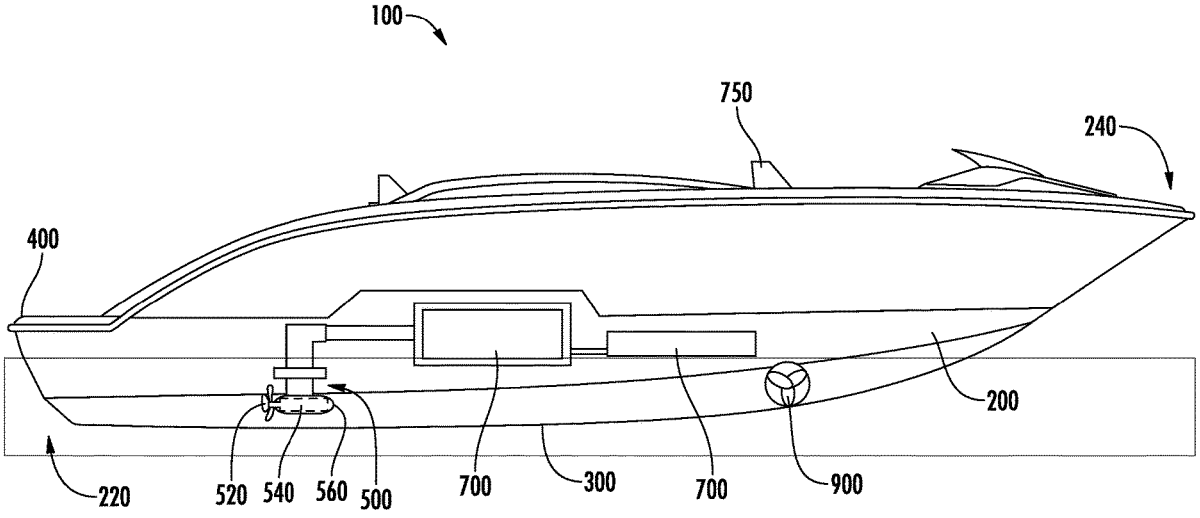
(57) **ABSTRACT**

A watercraft includes a hull having a lengthwise-extending keel and a transom extending perpendicularly to the keel about an aft end of the hull. An electrically-powered propulsion pod is engaged with the hull on opposite sides of the keel. A single control unit is in communication with the propulsion pods, wherein the single control unit is arranged to interact with the propulsion pods to control steering, direction, and velocity of the hull. An associated method of forming a watercraft is also provided.



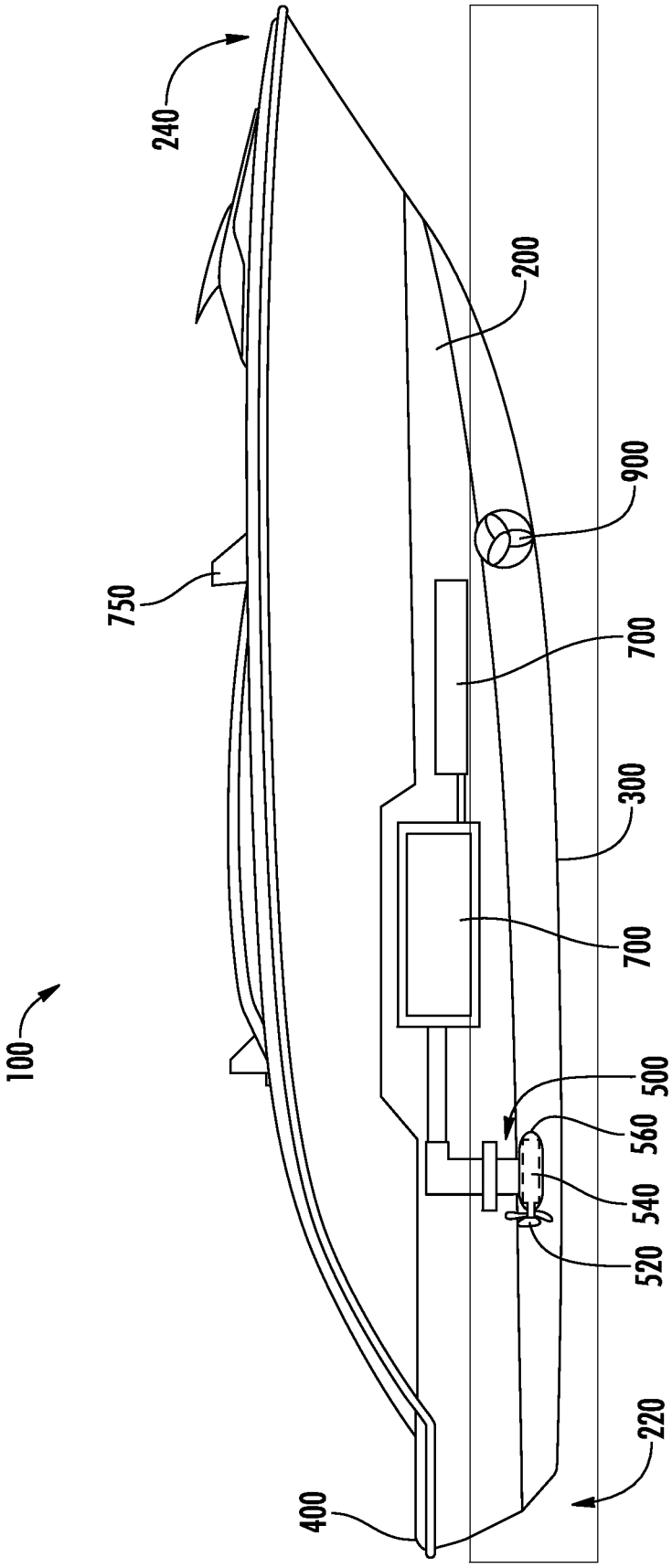


FIG. 1

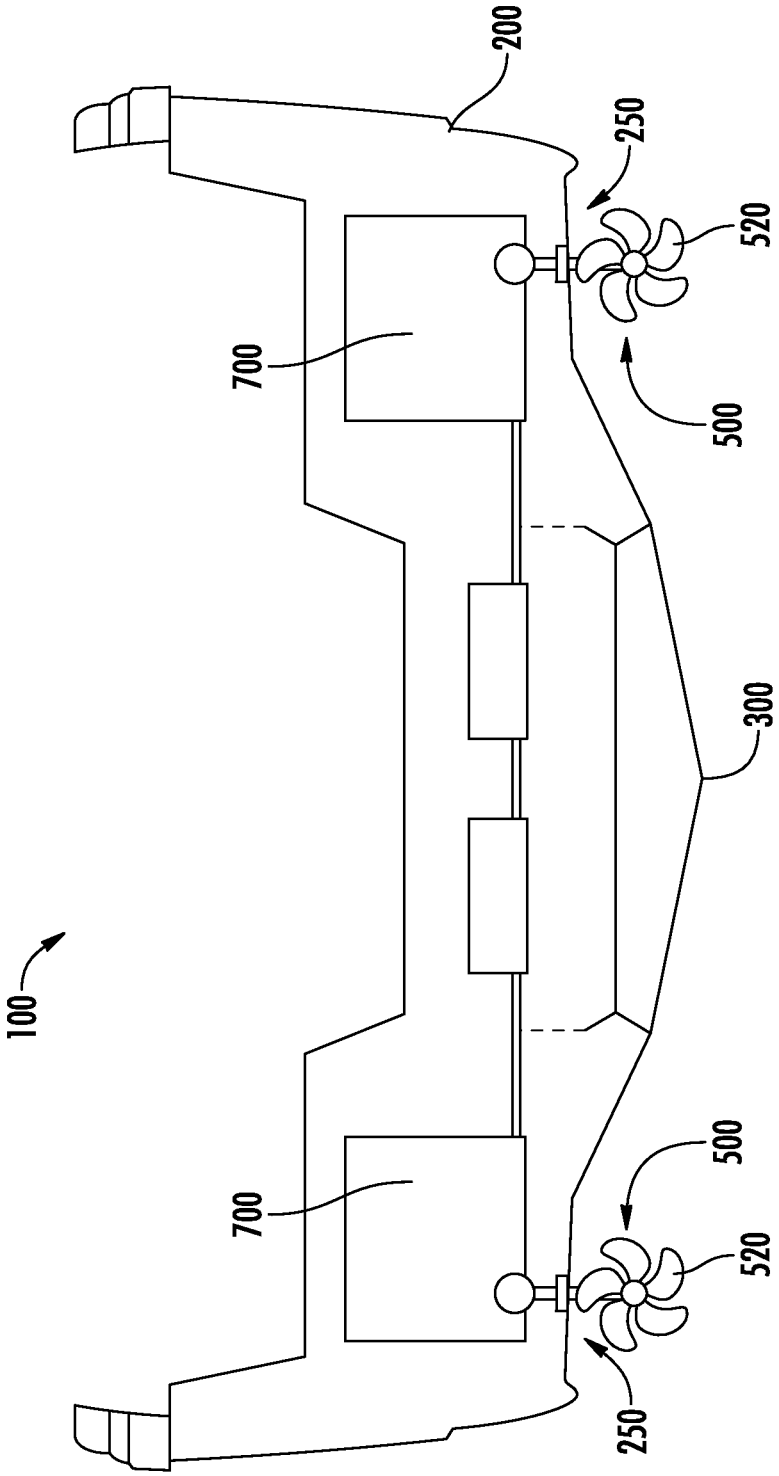


FIG. 2

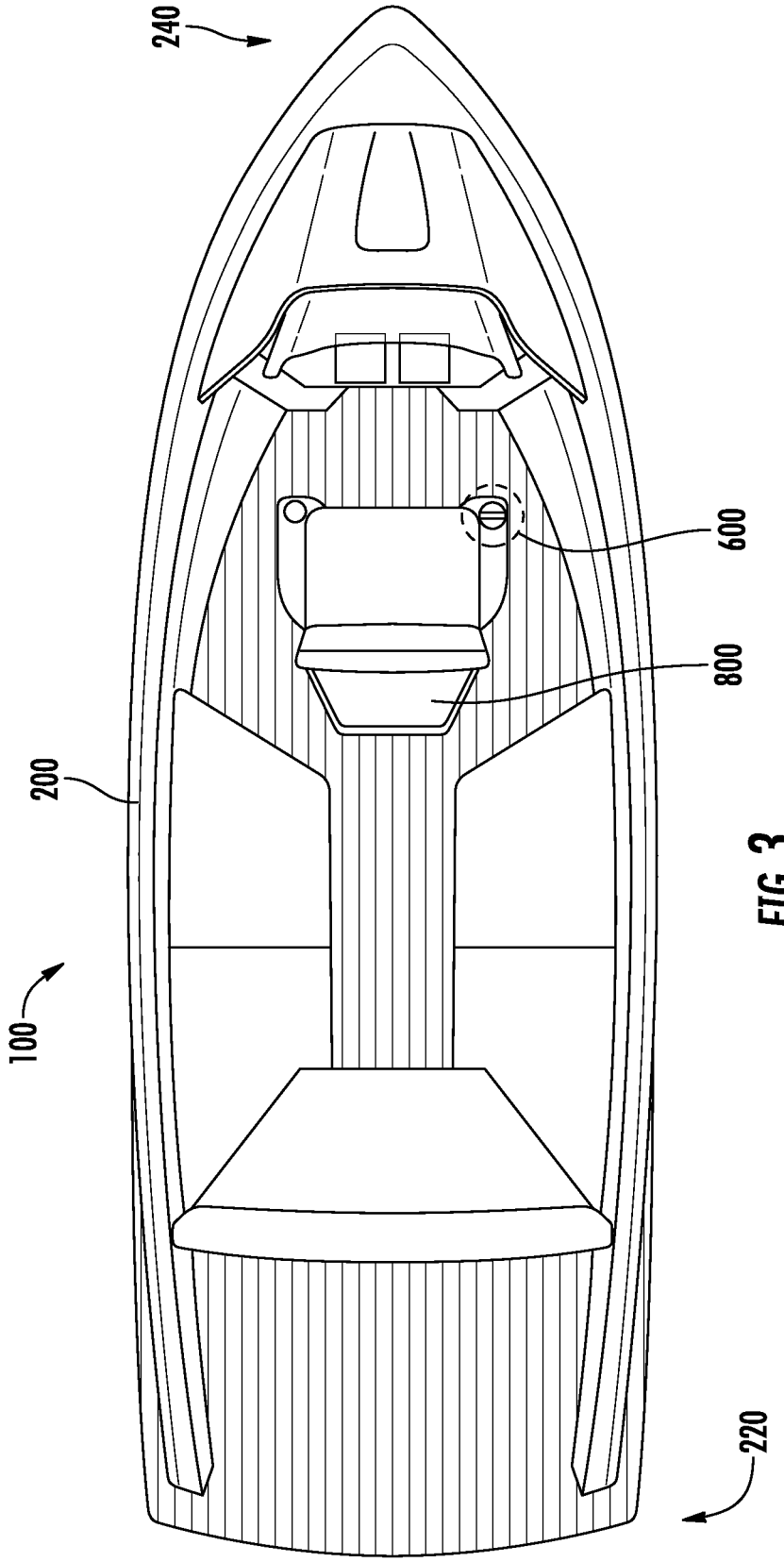


FIG. 3

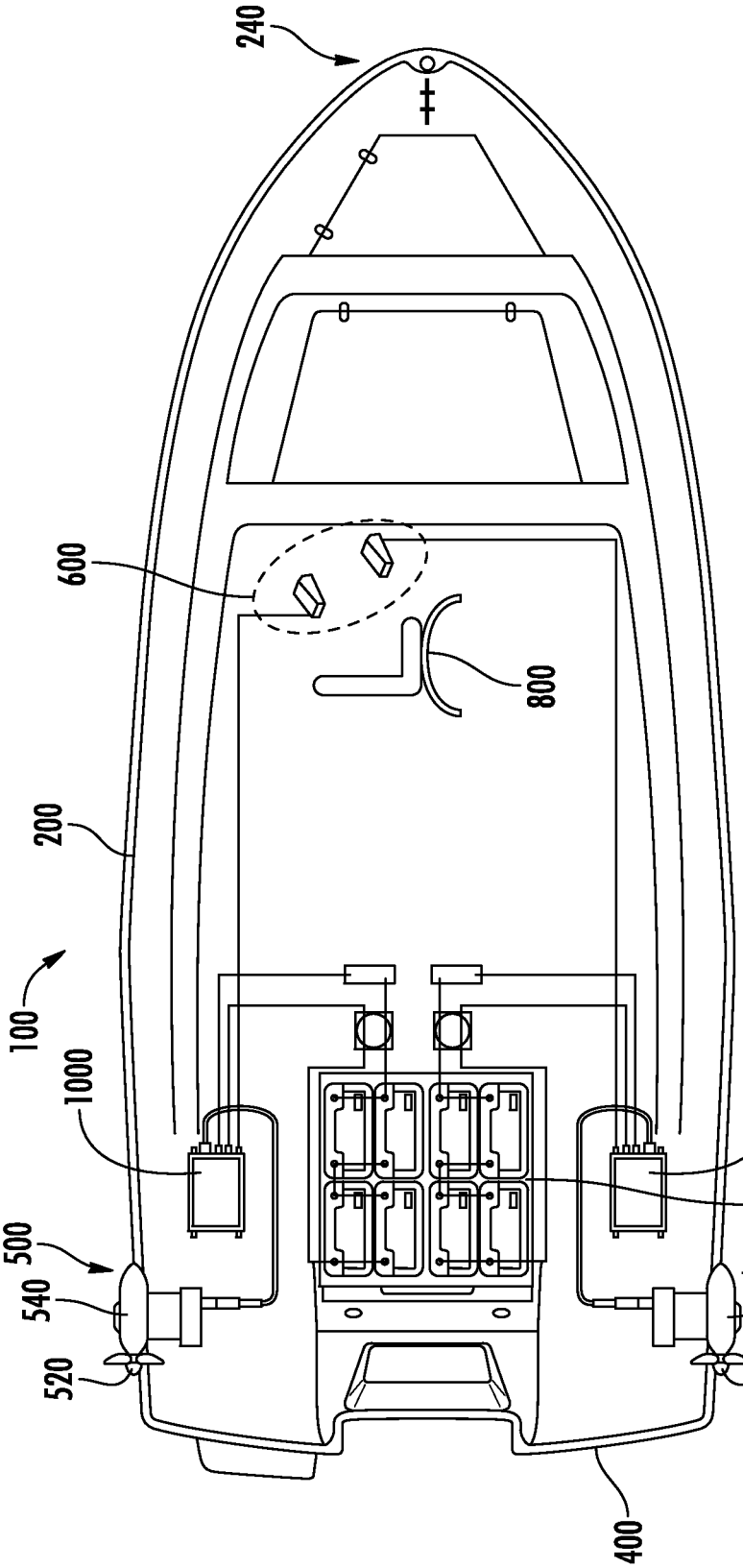

240
600
800
200
100
1000
1000
700
500
500
540
540
520
520
220
400

FIG. 4

WATERCRAFT WITH ELECTRIC DRIVE SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Patent Application Ser. No. 63/028,746 to Potts, filed May 22, 2020, which is entirely incorporated herein by reference.

BACKGROUND

Field of the Disclosure

[0002] Aspects of the present disclosure are directed to watercraft and, more particularly to a watercraft implementing an electric drive system and an associated method of forming a watercraft.

Description of Related Art

[0003] Some bodies of water or navigable waterways limit or disallow the use of internal combustion engine (ICE) powered watercraft. As such, manually-powered watercraft (e.g., kayaks, canoes) or electric-powered watercraft (e.g., boats with trolling motors or boats having the ICE motor replaced with an electric motor).

[0004] However, such non-ICE watercraft generally cannot meet the performance of ICE watercraft in terms of, for example, hull planning, hull speed, and maneuverability. Moreover, in the case of watercraft having the ICE motor replaced with an electric motor, the complexity of the systems and moving parts of such a watercraft can create additional considerations, including for example, efficiency, weight, and cooling of the driveline components.

[0005] Thus, there exist a need for a watercraft having an electric drive system that addresses these and other needs, while implementing technology to create a relatively simple and user-friendly watercraft configuration.

SUMMARY

[0006] The above and other needs are met by aspects of the present disclosure which, in one aspect, provides a watercraft including a hull having a lengthwise-extending keel and a transom extending perpendicularly to the keel about an aft end of the hull. An electrically-powered propulsion pod is engaged with the hull on opposite sides of the keel. A single control unit is in communication with the propulsion pods, wherein the single control unit is arranged to interact with the propulsion pods to control steering, direction, and velocity of the hull.

[0007] The present disclosure thus includes, without limitation, the following example embodiments:

[0008] Example Embodiment 1: A watercraft, comprising a hull having a lengthwise-extending keel and a transom extending perpendicularly to the keel about an aft end of the hull; two electrically-powered propulsion pods engaged with the hull and arranged on opposite sides of the keel; and a single control unit in communication with the propulsion pods, the single control unit being arranged to interact with the propulsion pods to control steering, direction, and velocity of the hull.

[0009] Example Embodiment 2: The watercraft of any preceding example embodiment, or combinations thereof, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein the propulsion pods are fixedly engaged with the hull with the propulsion units arranged in a fixed orientation such that the thrust is produced substantially parallel to the keel.

[0010] Example Embodiment 3: The watercraft of any preceding example embodiment, or combinations thereof, wherein the control unit is arranged to direct the propulsion units to produce a different amount of thrust or a different direction of thrust between the propulsion units so as to control steering of the hull.

[0011] Example Embodiment 4: The watercraft of any preceding example embodiment, or combinations thereof, wherein each propulsion pod includes an electric motor engaged with a propulsion unit, the electric motor and the propulsion unit being arranged to cooperate to produce thrust, and wherein the electric motor is mounted in the propulsion pod externally to the hull.

[0012] Example Embodiment 5: The watercraft of any preceding example embodiment, or combinations thereof, wherein the electric motor is arranged in a direct drive relation with the propulsion unit, and wherein the control unit is arranged to reverse polarity to the electric motor to change a thrust direction of the propulsion unit to control the direction of the hull.

[0013] Example Embodiment 6: The watercraft of any preceding example embodiment, or combinations thereof, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein the propulsion pods are engaged with the hull such that the propulsion units are forward of the transom.

[0014] Example Embodiment 7: The watercraft of any preceding example embodiment, or combinations thereof, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein the propulsion pods are engaged with the hull adjacent to the transom such that the propulsion units extend aft of the transom.

[0015] Example Embodiment 8: The watercraft of any preceding example embodiment, or combinations thereof, wherein the propulsion pods are fixedly engaged with the hull and are spaced apart toward opposing sides of the hull away from the keel.

[0016] Example Embodiment 9: The watercraft of any preceding example embodiment, or combinations thereof, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein the propulsion pods fixedly engaged with the hull are arranged with respect to the hull such that the propulsion units extend downwardly from the hull equal to or less than the keel.

[0017] Example Embodiment 10: The watercraft of any preceding example embodiment, or combinations thereof, comprising a power source within the hull and arranged in communication with the propulsion pods and the control unit, the power source being movable fore and aft within the hull, substantially parallel to the keel.

[0018] Example Embodiment 11: The watercraft of any preceding example embodiment, or combinations thereof, wherein the control unit comprises a single joystick input device arranged to control both propulsion pods, or a pair of joystick input devices with each of the pair of joystick input devices being arranged to control a corresponding one of the propulsion pods.

[0019] Example Embodiment 12: A method of forming a watercraft, the watercraft including a hull having a lengthwise-extending keel and a transom extending perpendicu-

larly to the keel about an aft end of the hull, the method comprising engaging two electrically-powered propulsion pods with the hull such that the propulsion pods are arranged on opposite sides of the keel; and engaging a single control unit in communication with the propulsion pods, such that the single control unit is arranged to interact with the propulsion pods to control steering, direction, and velocity of the hull.

[0020] Example Embodiment 13: The method of any preceding example embodiment, or combinations thereof, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein engaging the propulsion pods with the hull comprises fixedly engaging the propulsion pods with the hull, with the propulsion units arranged in a fixed orientation, such that the thrust is produced substantially parallel to the keel.

[0021] Example Embodiment 14: The method of any preceding example embodiment, or combinations thereof, wherein engaging the single control unit comprises engaging the single control unit in communication with the propulsion pods such that the control unit is arranged to direct the propulsion units to produce a different amount of thrust or a different direction of thrust between the propulsion units so as to control steering of the hull.

[0022] Example Embodiment 15: The method of any preceding example embodiment, or combinations thereof, wherein each propulsion pod includes an electric motor engaged with a propulsion unit, the electric motor and the propulsion unit being arranged to cooperate to produce thrust, and wherein engaging the propulsion pods with the hull comprises mounting the electric motor in the propulsion pod externally to the hull.

[0023] Example Embodiment 16: The method of any preceding example embodiment, or combinations thereof, wherein the electric motor is arranged in a direct drive relation with the propulsion unit, and wherein engaging the single control unit comprises engaging the single control unit in communication with the propulsion pods such that the control unit is arranged to reverse polarity to the electric motor to change a thrust direction of the propulsion unit to control the direction of the hull.

[0024] Example Embodiment 17: The method of any preceding example embodiment, or combinations thereof, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein engaging the propulsion pods with the hull comprises engaging the propulsion pods with the hull such that the propulsion units are forward of the transom.

[0025] Example Embodiment 18: The method of any preceding example embodiment, or combinations thereof, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein engaging the propulsion pods with the hull comprises engaging the propulsion pods with the hull adjacent to the transom such that the propulsion units extend aft of the transom.

[0026] Example Embodiment 19: The method of any preceding example embodiment, or combinations thereof, wherein engaging the propulsion pods with the hull comprises fixedly engaging the propulsion pods with the hull such that the propulsion pods are spaced apart toward opposing sides of the hull away from the keel.

[0027] Example Embodiment 20: The method of any preceding example embodiment, or combinations thereof, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein engaging the propulsion pods with the hull comprises fixedly engaging the propulsion pods with the hull such that the propulsion units are arranged with respect to the hull to extend downwardly from the hull equal to or less than the keel.

[0028] Example Embodiment 21: The method of any preceding example embodiment, or combinations thereof, comprising arranging a power source within the hull in communication with the propulsion pods and the control unit, the power source being movable fore and aft within the hull, substantially parallel to the keel.

[0029] Example Embodiment 22: The method of any preceding example embodiment, or combinations thereof, wherein engaging the single control unit comprises engaging the single control unit, comprising a single joystick input device arranged to control both propulsion pods, or a pair of joystick input devices with each of the pair of joystick input devices being arranged to control a corresponding one of the propulsion pods, in communication with the propulsion pods.

[0030] These and other features, aspects, and advantages of the present disclosure will be apparent from a reading of the following detailed description together with the accompanying drawings, which are briefly described below. The present disclosure includes any combination of two, three, four, or more features or elements set forth in this disclosure, regardless of whether such features or elements are expressly combined or otherwise recited in a specific embodiment description herein. This disclosure is intended to be read holistically such that any separable features or elements of the disclosure, in any of its aspects and embodiments, should be viewed as intended, namely to be combinable, unless the context of the disclosure clearly dictates otherwise.

[0031] It will be appreciated that the summary herein is provided merely for purposes of summarizing some example aspects so as to provide a basic understanding of the disclosure. As such, it will be appreciated that the above described example aspects are merely examples and should not be construed to narrow the scope or spirit of the disclosure in any way. It will be appreciated that the scope of the disclosure encompasses many potential aspects, some of which will be further described below, in addition to those herein summarized. Further, other aspects and advantages of such aspects disclosed herein will become apparent from the following detailed description taken in conjunction with the accompanying drawings which illustrate, by way of example, the principles of the described aspects.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

[0032] Having thus described the disclosure in general terms, reference will now be made to the accompanying drawings, which are not necessarily drawn to scale, and wherein:

[0033] FIG. **1** schematically illustrates a side view of a watercraft including an electric drive system, according to one aspect of the present disclosure;

[0034] FIG. **2** schematically illustrates a rear view of a watercraft including an electric drive system, according to the aspect of the present disclosure illustrated in FIG. **1**; and

[0035] FIGS. **3** and **4** schematically illustrate plan views of a watercraft including an electric drive system, according to different aspects of the present disclosure.

DETAILED DESCRIPTION OF THE DISCLOSURE

[0036] The present disclosure now will be described more fully hereinafter with reference to the accompanying drawings, in which some, but not all aspects of the disclosure are shown. Indeed, the disclosure may be embodied in many different forms and should not be construed as limited to the aspects set forth herein; rather, these aspects are provided so that this disclosure will satisfy applicable legal requirements. Like numbers refer to like elements throughout.

[0037] Particular aspects of the present disclosure, as shown, for example, in FIGS. **1-4** are generally directed to a watercraft **100** implementing a drive system. Such a watercraft **100** comprises a hull **200** having a lengthwise-extending keel **300** and a transom **400** extending perpendicularly to the keel **300** about an aft end **220** of the hull **200**. The hull **200** also includes a fore end or bow **240** opposing the aft end **220**. According to certain aspects of the present disclosure, the watercraft **100** includes a pair of electrically-powered propulsion pods **500**, wherein the propulsions pods **500** are engaged with the hull **200** on opposite sides of the keel **300**. Further, aspects of the present disclosure implement a single control unit **600** (see, e.g., FIGS. **3** and **4**) in communication with the propulsion pods **500**, wherein the single control unit **600** is arranged to interact with the propulsion pods **500** to control, for example, steering, direction, and velocity of the hull **200**.

[0038] Each propulsion pod **500** includes a propulsion unit **520** arranged to produce thrust to propel the hull **200** through the water. The propulsion unit **520** is, for example, a propeller, a waterjet unit, or the like. Each propulsion pod **500** includes an electric motor **540** engaged with the propulsion unit **520**, wherein the electric motor **540** and the propulsion unit **520** are arranged to cooperate to produce the thrust. According to some aspects of the present disclosure, the electric motor **540** is mounted in the propulsion pod **500**, externally to the hull **200**. That is, for example, the electric motor **540** is arranged in a direct drive relation with the propulsion unit **520**, and can thus be mounted in the foot **560** of the propulsion pod **500**. Mounting the electric motor **540** in the foot **560** of the propulsion pod **500** may, for example, promote stability of the hull **200** by moving the weight of the electric motors **540** externally to the hull **200** and lowering the center of gravity. In addition, cooling provisions for the electric motor **540** can be integrated into the foot **560**, and thus such cooling provisions are also not required to be mounted within the hull **200**.

[0039] In some aspects, the propulsion pods **500** are fixedly engaged with the hull **200** such that the propulsion units **520** are arranged in a fixed orientation (e.g., the propulsion pods **500** and/or the propulsion units **520** are not rotatable or steerable with respect to the hull **200**). In one fixed orientation, for example, the propulsion pods **500**/propulsion units **520** are arranged and fixedly mounted to the hull **200** such that the thrust is produced substantially parallel to the keel **300**.

[0040] In further aspects, the hull **200** is configured, for example, as a cathedral hull or a tri-hull, or defines longitudinally-extending tunnels or pockets **250** on either side of the keel **300**. In many instances, the keel **300** defines the deepest portion of the hull **200**, and thus determines the draft of the hull **200**. In such aspects, the propulsion pods **500** are fixedly engaged with and are arranged with respect to the hull **200** within the tunnels/pockets **250**, or are disposed between the sponsons and the keel **300** of the hull **200** such that the propulsion units **520** extend downwardly from the hull **200** equal to or less than the keel **300**. That is, the propulsion pods **500** are mounted to the hull between the sponsons and the keel **300**, or within the tunnels/pockets, such that the propulsions units **520** (e.g., propellers) are raised above the bottom of the keel **300**. This arrangement serves to protect the propulsion units (e.g., propellers) from damage in the event of, for example, beaching of the hull **200** or the hull **200** running over a floating object.

[0041] In other aspects, the propulsion pods **500** are engaged with the hull **200** such that the propulsion units **520** are disposed forward of the transom **400**. Arranging the propulsion units **520** forward of the transom **400** serves, for example, a safety purpose by arranging the propulsion units **520** (e.g., propellers) under the hull **200** so as to lower the risk of contact with persons approaching the transom **400**. In other aspects, the propulsion pods **500** are engaged with the hull **200** adjacent to the transom **400** such that the propulsion units **520** extend aft of the transom **400**. In such instances, the aft-most disposition of the propulsion pods **500** conserves space within the hull **200** and the propulsion units **520** disposed aft of the transom **400** can, for example, facilitate a flat running attitude of the hull **200**. In this manner, aspects of the watercraft **100** disclosed herein do not require and/or implement a supplemental attitude adjustment provision such as, for example, trim tabs or propulsion pods having tilt/trim adjustments, though one skilled in the art will appreciate that such a supplemental attitude adjustment provision can be implemented, if necessary or desired.

[0042] In some aspects, a power source **700** is disposed within the hull **200** (e.g., so as to be balanced on either side of the keel **300**) and is arranged in electrical communication with the propulsion pods **500** and with the single control unit **600** generally disposed at the helm **800** of the watercraft **100**. One skilled in the art will appreciate, however, that the control unit **600** may be mounted elsewhere in the hull **200** or may comprise a wired or wireless handheld unit. In particular instances, the control unit **600** is arranged primarily to control the flow of electrical power from the power source **700** (e.g., a battery) to the electric motor **540** mounted in the propulsion pods **500** in order for the propulsion units **520** to provide the thrust to propel the hull **200**. Accordingly, the control unit **600** is also arranged to direct the propulsion pods **500** to produce different amounts of thrust (e.g., by differing the amount of electrical power, such as amperage, directed to each electric motor **540**) to affect the velocity of the hull **200** (i.e., increased amperage to the electric motors **540** causes increased thrust from the propulsion units **520** which, in turn, causes an increased velocity of the hull **200**). In other instances, the power source **700** is movable fore and aft within the hull **200**, with the movement being substantially parallel to the keel **300**, to determine an appropriate placement of the power source **700** for providing a flat stationary attitude and/or a flat running attitude of the hull **200**.

[0043] In particular aspects, the control unit **600** is configured to reverse the polarity of the electrical power from the power source **700** to the electric motor **540** to change the thrust direction of the propulsion unit **520**. In this manner, the control unit **600** is arranged to control the direction of propulsion of the hull **200**. That is, a first polarity of the electrical power causes the propulsion units **520** to produce the thrust for directing the hull **200** in a first direction (e.g.,

a forward direction), while switching to a second polarity (opposite to the first polarity) of the electrical power causes the propulsion units **520** to produce the thrust for directing the hull **200** in a second direction (e.g., a reverse direction) opposite to the first direction.

[0044] With the control unit **600** arranged to control the electric motors **540**/propulsion units **540** in this manner, the control unit **600** is also arranged to be capable of directing the propulsion units **540** to produce a different amounts of thrust (e.g., by differing the amount of electrical power, such as amperage, directed to each electric motor **540**) or to produce different directions of thrust between the propulsion units **540**. In this manner, the control unit **600** and the propulsion pods **500** are used to control steering of the hull **200**. In some aspects, in order to facilitate or enhance steering responsiveness, the propulsion pods **500** fixedly engaged with the hull **200** are spaced apart toward opposing sides (e.g., port and starboard sides) of the hull **200**, away from the keel **300**. A relatively wider spacing allows the propulsion pods **500**, for example, to produce a greater steering torque about the keel **300**. In some instances, the watercraft **100** includes a bow thruster **900** mounted to the hull **200** toward the fore end or bow **240**, wherein the bow thruster **900** is arranged in communication with the power source **700** to produce lateral thrust (e.g., perpendicular to the keel **300**). Accordingly, the bow thruster **900** also in communication with the control unit **600** can be implemented in conjunction with the propulsion pods **500** to control steering of the hull **200**. In this manner, aspects of the watercraft **100** disclosed herein do not require and/or implement a supplemental steering provision such as, for example, a rudder or rotatable propulsion pod, though one skilled in the art will appreciate that such a supplemental steering provision can be implemented, if necessary or desired.

[0045] In particular aspects of the disclosure, the control unit **600** comprises a single joystick input device (see, e.g., FIG. **3**) arranged to control both propulsion pods **500** (and the optional bow thruster **900**) by way of an appropriately-configured computer device **1000** (see, e.g., FIG. **4**) having a processor and a memory storing executable instructions executable by the processor for directing such control. In other aspects, the control unit **600** includes a pair of joystick input devices (see, e.g., FIG. **4**), with each of the pair of joystick input devices being arranged to control a corresponding one of the propulsion pods **500**, by way of the computer device **1000**. In such aspects, the computer device **1000** is in communication with the optional bow thruster **900** and configured to actuate the bow thruster **900**, as needed, for example in conjunction with steering inputs from the pair of joysticks. In this manner, aspects of the watercraft **100** disclosed herein do not require and/or implement a supplemental steering input provision such as, for example, a steering wheel, though one skilled in the art will appreciate that such a supplemental steering input provision can be implemented, if necessary or desired.

[0046] Many modifications and other embodiments of the inventions set forth herein will come to mind to one skilled in the art to which these disclosed embodiments pertain having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is to be understood that embodiments of the invention are not to be limited to the specific embodiments disclosed and that modifications and other embodiments are intended to be included within the scope of the invention. Moreover, although the foregoing descriptions and the associated drawings describe example embodiments in the context of certain example combinations of elements and/or functions, it should be appreciated that different combinations of elements and/or functions may be provided by alternative embodiments without departing from the scope of the disclosure. In this regard, for example, different combinations of elements and/or functions than those explicitly described above are also contemplated within the scope of the disclosure. Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation.

[0047] It should be understood that although the terms first, second, etc. may be used herein to describe various steps or calculations, these steps or calculations should not be limited by these terms. These terms are only used to distinguish one operation or calculation from another. For example, a first calculation may be termed a second calculation, and, similarly, a second step may be termed a first step, without departing from the scope of this disclosure. As used herein, the term "and/or" and the "/" symbol includes any and all combinations of one or more of the associated listed items.

[0048] As used herein, the singular forms "a", "an" and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises", "comprising", "includes", and/or "including", when used herein, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof. Therefore, the terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting.

That which is claimed:

1. A watercraft, comprising:

a hull having a lengthwise-extending keel and a transom extending perpendicularly to the keel about an aft end of the hull;

two electrically-powered propulsion pods engaged with the hull and arranged on opposite sides of the keel; and

a single control unit in communication with the propulsion pods, the single control unit being arranged to interact with the propulsion pods to control steering, direction, and velocity of the hull.

2. The watercraft of claim **1**, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein the propulsion pods are fixedly engaged with the hull with the propulsion units arranged in a fixed orientation such that the thrust is produced substantially parallel to the keel.

3. The watercraft of claim **2**, wherein the control unit is arranged to direct the propulsion units to produce a different amount of thrust or a different direction of thrust between the propulsion units so as to control steering of the hull.

4. The watercraft of claim **1**, wherein each propulsion pod includes an electric motor engaged with a propulsion unit, the electric motor and the propulsion unit being arranged to cooperate to produce thrust, and wherein the electric motor is mounted in the propulsion pod externally to the hull.

5. The watercraft of claim **4**, wherein the electric motor is arranged in a direct drive relation with the propulsion unit,

and wherein the control unit is arranged to reverse polarity to the electric motor to change a thrust direction of the propulsion unit to control the direction of the hull.

6. The watercraft of claim **1**, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein the propulsion pods are engaged with the hull such that the propulsion units are forward of the transom.

7. The watercraft of claim **1**, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein the propulsion pods are engaged with the hull adjacent to the transom such that the propulsion units extend aft of the transom.

8. The watercraft of claim **1**, wherein the propulsion pods are fixedly engaged with the hull and are spaced apart toward opposing sides of the hull away from the keel.

9. The watercraft of claim **1**, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein the propulsion pods fixedly engaged with the hull are arranged with respect to the hull such that the propulsion units extend downwardly from the hull equal to or less than the keel.

10. The watercraft of claim **1**, comprising a power source within the hull and arranged in communication with the propulsion pods and the control unit, the power source being movable fore and aft within the hull, substantially parallel to the keel.

11. The watercraft of claim **1**, wherein the control unit comprises a single joystick input device arranged to control both propulsion pods, or a pair of joystick input devices with each of the pair of joystick input devices being arranged to control a corresponding one of the propulsion pods.

12. A method of forming a watercraft, the watercraft including a hull having a lengthwise-extending keel and a transom extending perpendicularly to the keel about an aft end of the hull, the method comprising:

engaging two electrically-powered propulsion pods with the hull such that the propulsion pods are arranged on opposite sides of the keel; and

engaging a single control unit in communication with the propulsion pods, such that the single control unit is arranged to interact with the propulsion pods to control steering, direction, and velocity of the hull.

13. The method of claim **12**, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein engaging the propulsion pods with the hull comprises fixedly engaging the propulsion pods with the hull, with the propulsion units arranged in a fixed orientation, such that the thrust is produced substantially parallel to the keel.

14. The method of claim **13**, wherein engaging the single control unit comprises engaging the single control unit in communication with the propulsion pods such that the control unit is arranged to direct the propulsion units to produce a different amount of thrust or a different direction of thrust between the propulsion units so as to control steering of the hull.

15. The method of claim **12**, wherein each propulsion pod includes an electric motor engaged with a propulsion unit, the electric motor and the propulsion unit being arranged to cooperate to produce thrust, and wherein engaging the propulsion pods with the hull comprises mounting the electric motor in the propulsion pod externally to the hull.

16. The method of claim **15**, wherein the electric motor is arranged in a direct drive relation with the propulsion unit, and wherein engaging the single control unit comprises engaging the single control unit in communication with the propulsion pods such that the control unit is arranged to reverse polarity to the electric motor to change a thrust direction of the propulsion unit to control the direction of the hull.

17. The method of claim **12**, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein engaging the propulsion pods with the hull comprises engaging the propulsion pods with the hull such that the propulsion units are forward of the transom.

18. The method of claim **12**, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein engaging the propulsion pods with the hull comprises engaging the propulsion pods with the hull adjacent to the transom such that the propulsion units extend aft of the transom.

19. The method of claim **12**, wherein engaging the propulsion pods with the hull comprises fixedly engaging the propulsion pods with the hull such that the propulsion pods are spaced apart toward opposing sides of the hull away from the keel.

20. The method of claim **12**, wherein each propulsion pod includes a propulsion unit arranged to produce thrust, and wherein engaging the propulsion pods with the hull comprises fixedly engaging the propulsion pods with the hull such that the propulsion units are arranged with respect to the hull to extend downwardly from the hull equal to or less than the keel.

21. The method of claim **12**, comprising arranging a power source within the hull in communication with the propulsion pods and the control unit, the power source being movable fore and aft within the hull, substantially parallel to the keel.

22. The method of claim **12**, wherein engaging the single control unit comprises engaging the single control unit, comprising a single joystick input device arranged to control both propulsion pods, or a pair of joystick input devices with each of the pair of joystick input devices being arranged to control a corresponding one of the propulsion pods, in communication with the propulsion pods.

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