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(54) **SYSTEM AND METHOD OF ADJUSTING THE LOCATION AND POSITION OF THE FORESAIL ON A SAILBOAT**

(76) Inventor: **Bradford G. Baruh**, Hillsborough, CA (US)

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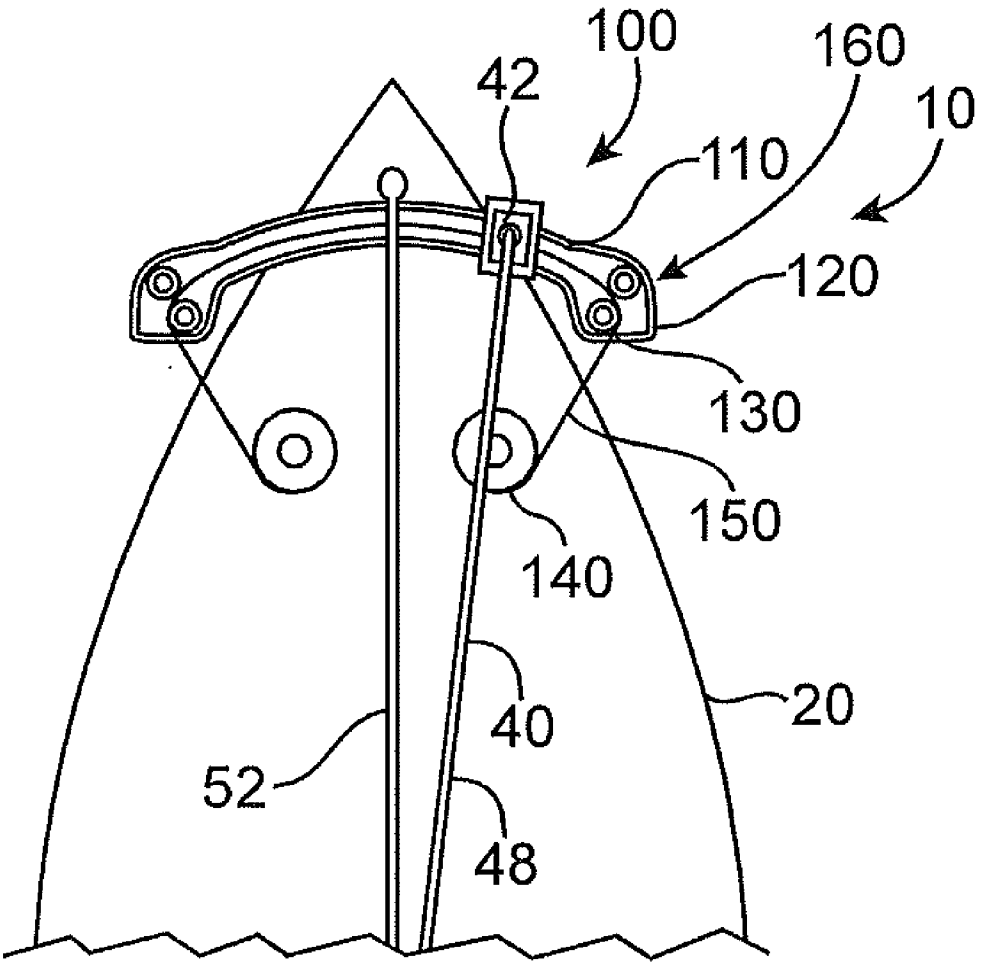
(52) **U.S. Cl.** **114/39.26**; 114/39.29

(57) **ABSTRACT**

A sailboat, which includes at least one hull; a mast; a plurality of sails, wherein at least one of the plurality of sails is a foresail; and a system for sailing windward, which includes a foresail beam attached to the mast of the sailboat at a mast end of the foresail beam and receives a leading edge of the foresail at a bow end of the foresail beam; and a foresail track, which extends from a starboard side to a port side of the sailboat and assists the foresail beam in movement from side to side.



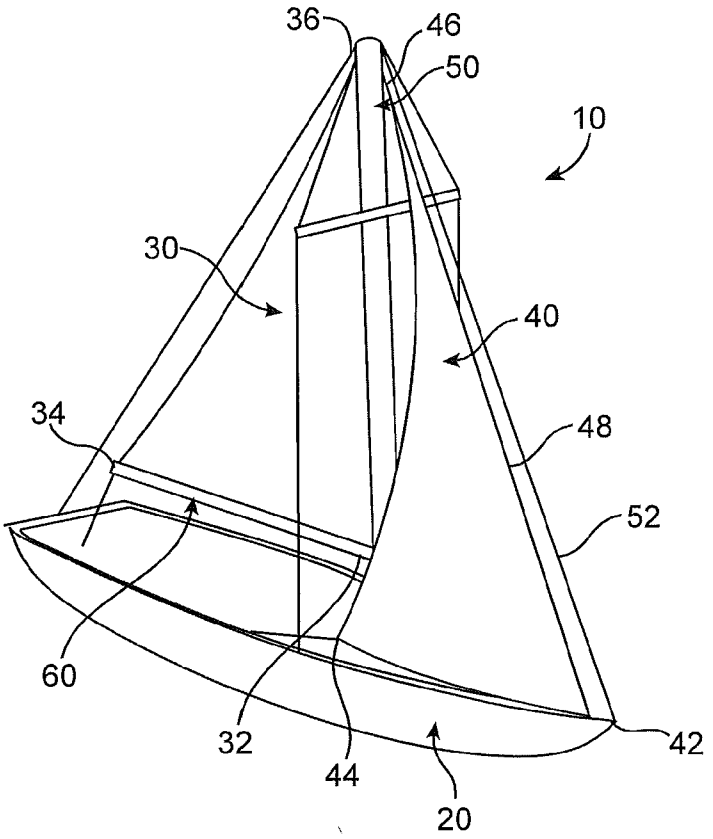

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FIG. 1

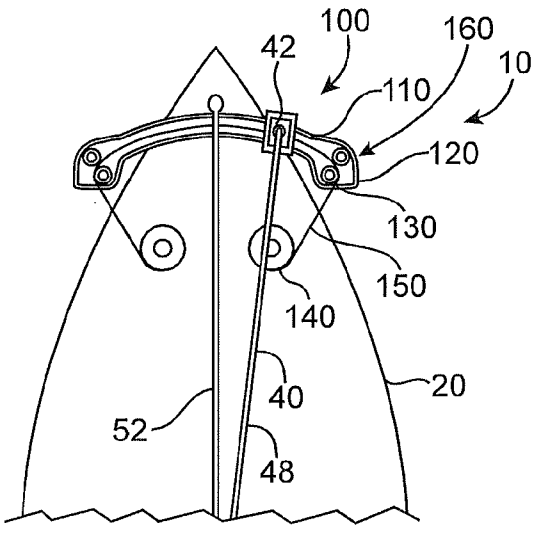
100
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FIG. 2

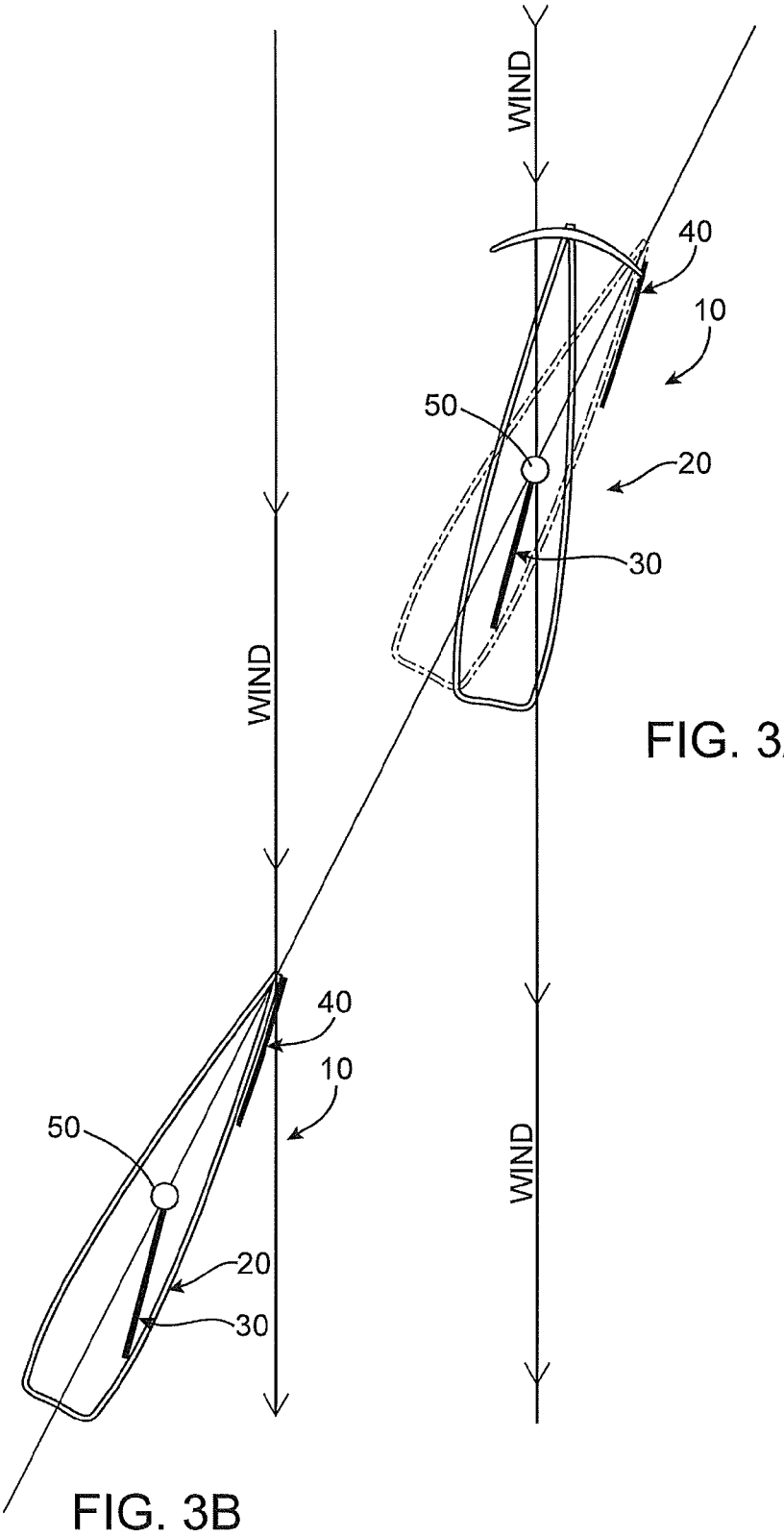

FIG. 3A

FIG. 3B

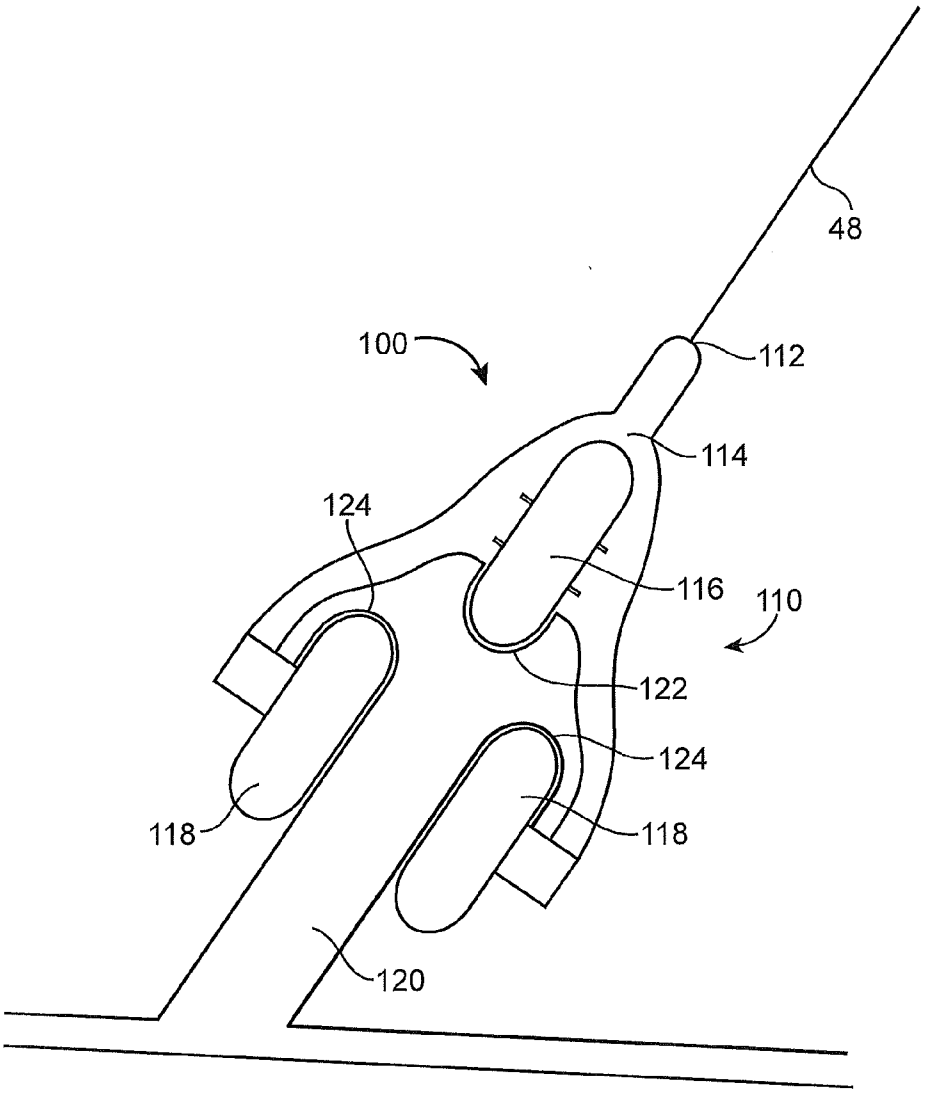

FIG. 4

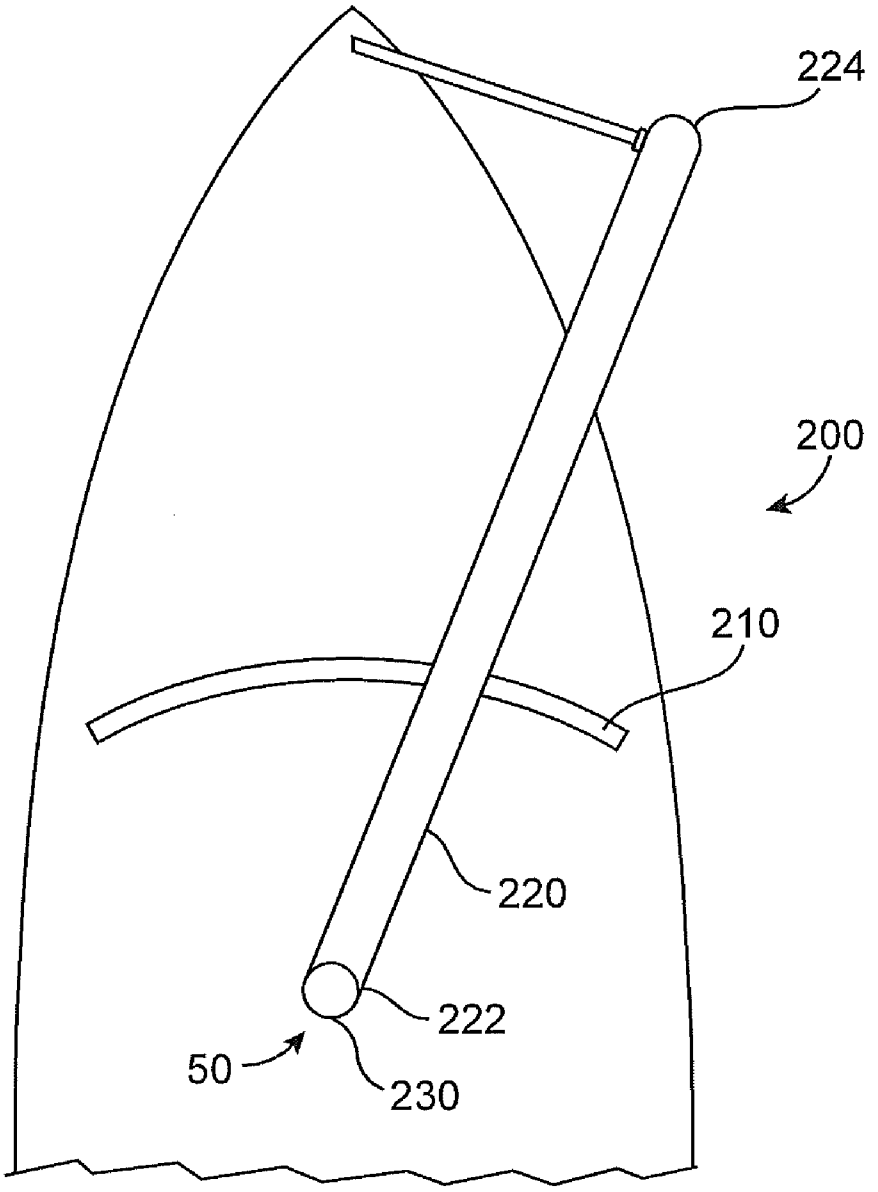

FIG. 5

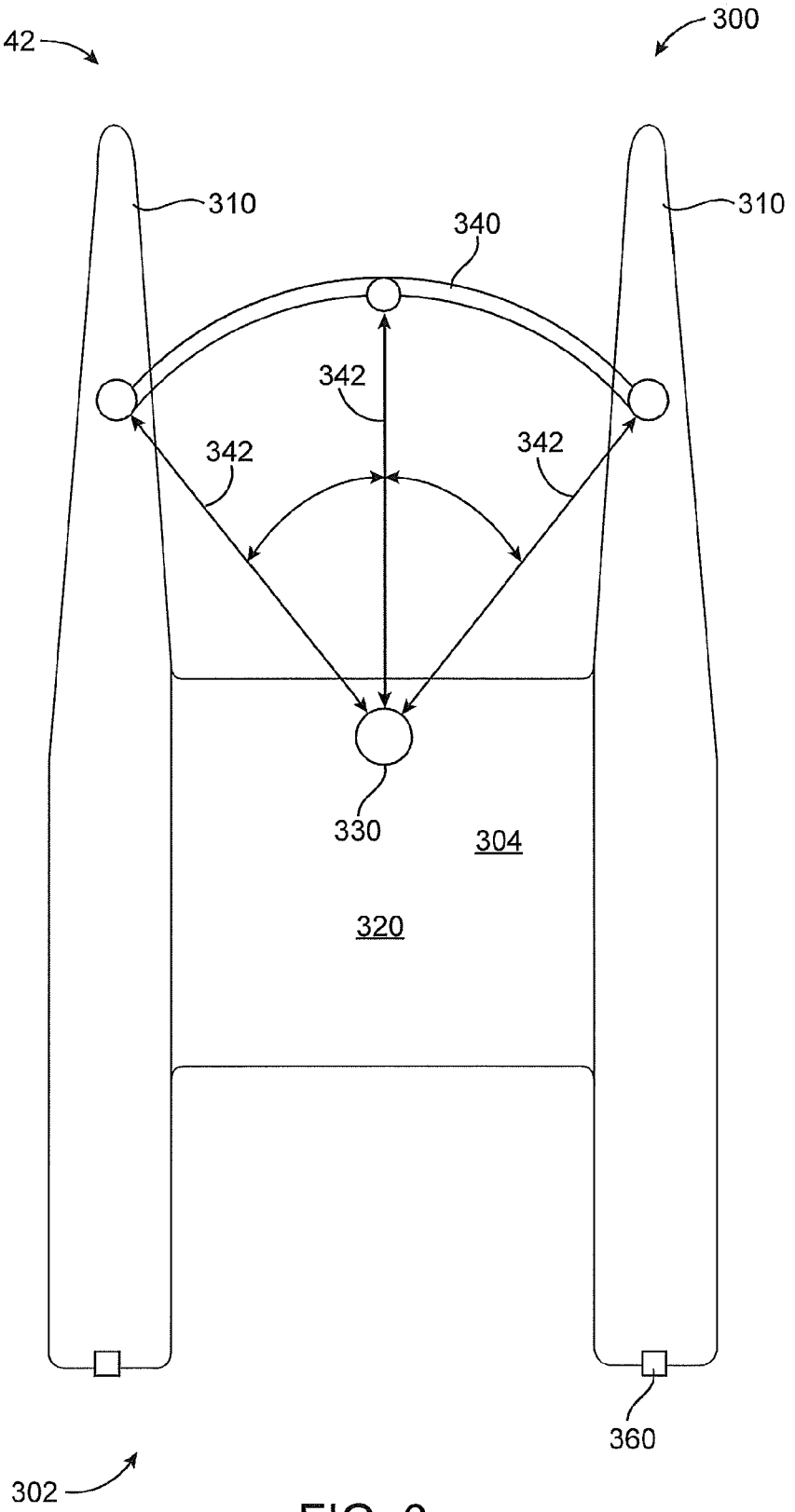

FIG. 6

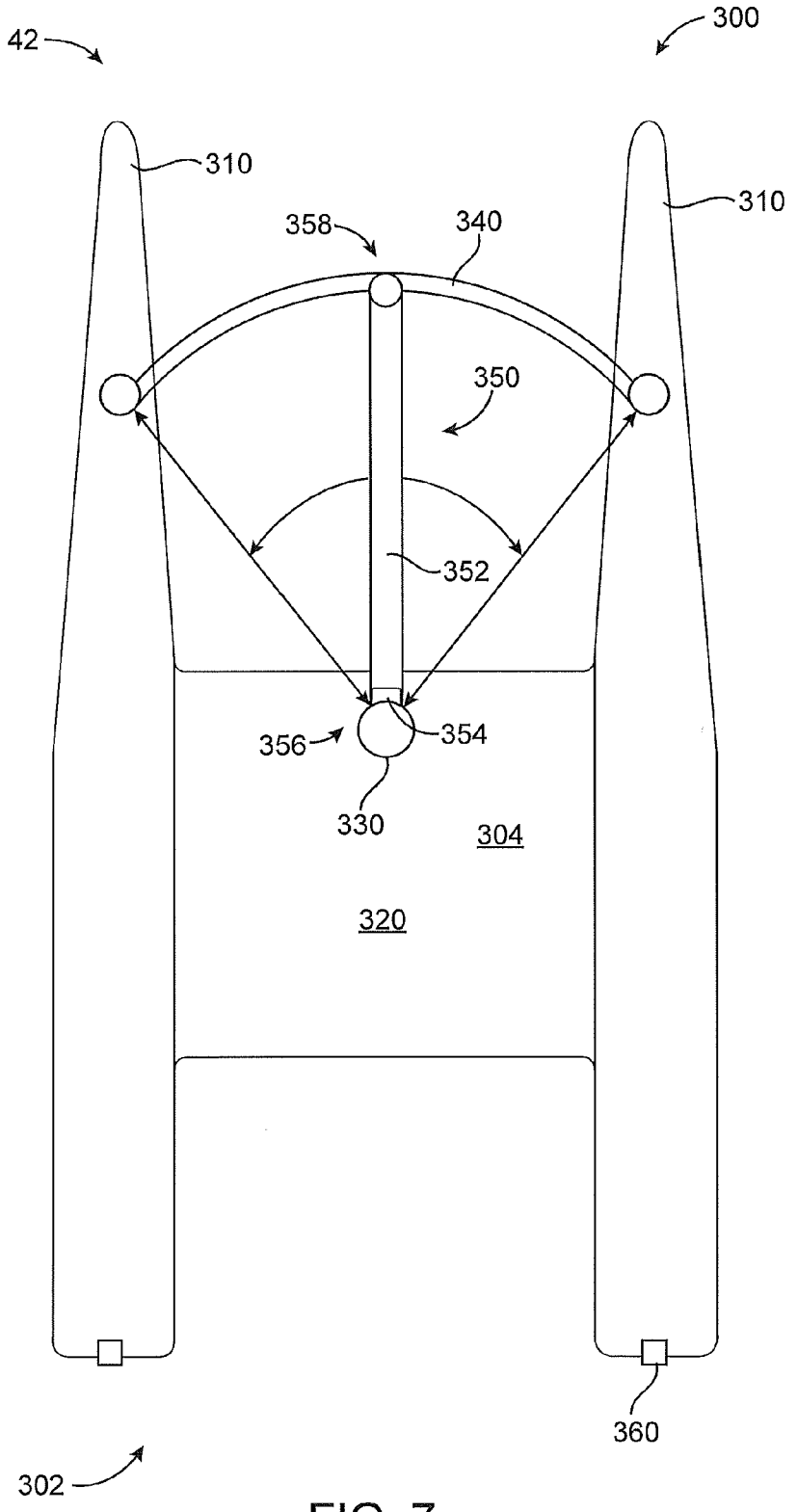

FIG. 7

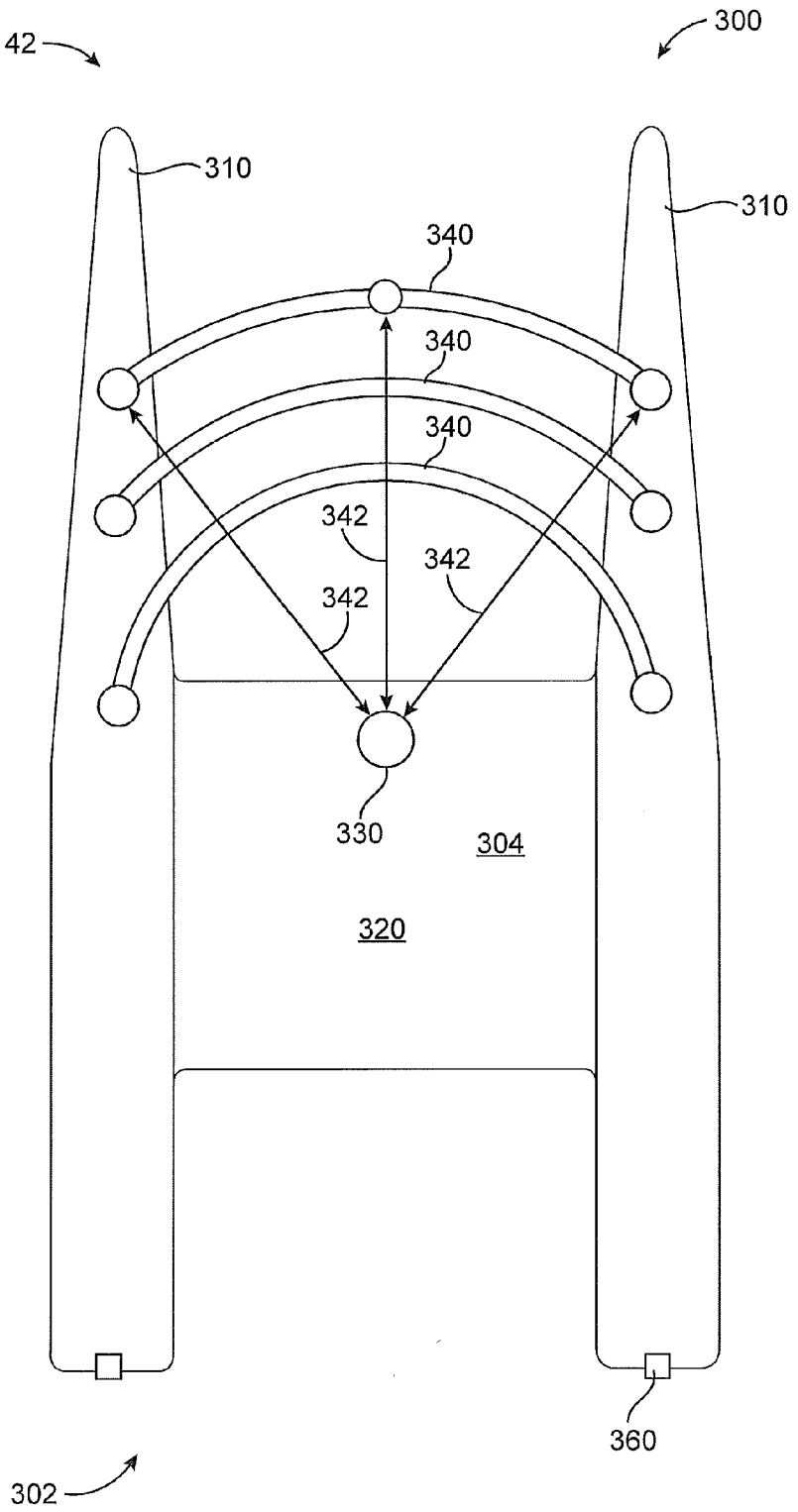

FIG. 8

SYSTEM AND METHOD OF ADJUSTING THE LOCATION AND POSITION OF THE FORESAIL ON A SAILBOAT

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation-in-part of U.S. patent application Ser. No. 11/788,785, filed on Apr. 19, 2007, which claims priority to U.S. Provisional Patent Application Ser. No. 60/900,549 filed on Feb. 8, 2007, and U.S. Provisional Patent Application Ser. No. 60/920,957 filed on Mar. 30, 2007, the contents, which are incorporated herein in their entirety.

FIELD OF THE INVENTION

[0002] This invention generally relates to a system and method of reducing leeway drift of a sailboat as the sailboat reaches an upwind objective by adjusting the location and position of the foresail (i.e., headsail, jib, genoa, or spinnaker) and/or adjusting the depth of the keel and/or keel foil, and more particularly to a system and method of adjusting the location and position of the foresail (headsail, jib, genoa, or spinnaker) on a sailboat by moving the location or position of the foresail and the forestay relative to the bow of the sailboat and/or by adjusting the depth of the keel and/or keel foil.

BACKGROUND

[0003] Typically, a sailboat includes a hull that sits in the water, a mast extending upwardly from the hull, sails supported by the mast, and either a centerboard or fixed keel extending downwardly from the hull into the water. The sails catch the wind and cause the hull to move forwardly through the water. Although, a sailboat cannot sail directly into the wind, a sailboat can sail in a generally windward direction. It can be appreciated that with skill and a combination of maneuvers, a sailor can maneuver a sailboat in almost any desired direction.

[0004] Because of the design of the sails, a sailboat can sail to windward, which is typically in a direction no less than about 15 to 25 degrees from the wind, depending upon the design of the boat and the skill of the sailor. Headway directly upwind or windward is typically achieved in a series of sequential maneuvers called tacks, in which the boat is first sailed windward with the wind over one side of the bow, and then turned through the wind so that the wind comes over the other side of the bow. In each tack, some headway upwind is achieved even though the boat does not move directly into the wind, and eventually the sailboat reaches an upwind objective after sailing a zig-zag course covering a distance greater than the straight line distance from the initial position to the upwind objective.

[0005] When a sailboat sails to windward, the forces on the sails can be resolved into a thrust component that moves the sailboat forwardly through the water and a drift component that pushes the sailboat sideways in a downwind direction. The sailboat therefore moves in a net direction that is forward, but also is slight downwind opposite to the net intended direction of movement. The sideways drift is called leeway or "slide slipping."

[0006] The downwardly projecting centerboard or keel of the sailboat offers resistance to the leeway produced by the sideways sail force, but at least some leeway remains. This leeway is being constantly accumulated, as there is a downwind movement as long as the sailboat is being sailed into the wind. The leeway significantly increases the time required for the sailboat to sail from its downwind starting position to the upwind objective, as it forces the sailboat to sail much further to make up for the accumulated sideways movement.

[0007] Attempts have been made to reduce the amount of leeway. For example, a movable centerboard or fixed keel extending into the water below the sailboat presents a broad surface to resist sideways drift. There have also been attempts to modify the shape of the centerboard or keel to provide a lifting force to counteract the sideways drift. These attempts have been based upon the observation that the centerboard or keel moving through the water is somewhat similar to the wing of an airplane that creates a lift as the wing is moved through the air. The lift of an airplane wing causes the airplane to move upward against the force of gravity, and the corresponding lift of a sailboat centerboard or keel that extends downwardly can cause the sailboat to be lifted in the upwind direction, thereby countering the sideways drift producing the leeway.

[0008] Fixed keels are typically used in larger sailboats. The keels are usually filled with lead or other dense material to act as ballast for the sailboat. For example, the keels of 12-meter sailboats may extend 10 feet below the surface of the water, and weigh 40,000 to 50,000 pounds.

[0009] It would be desirable to have a system or method of adjusting or changing the relative position of the fixed connection of the foresail, such that the angle of attack in the windward direction is slightly altered in the direction of the wind. Accordingly, it would be desirable to have a system and/or method of changing the angle or direction of the boat in a windward direction and/or use of an extendable keel, which is capable of providing a lifting force to counteract leeway, and is sufficiently reliable to be acceptable for general and racing use.

[0010] In addition, it would be desirable to have a retractable solar panel system, which can provide a source of energy to the sailboat. The solar panel system can be attached to a nautical stay, wherein the stay is fixed at one end to a hull of the sailboat and at a second end to a mast of the sailboat. The solar panel system includes a plurality of solar panels, which are attached to a system for extending and retracting the plurality of solar panels, such that when not in use, the solar panels can be stacked.

SUMMARY

[0011] In accordance with one embodiment, a system for sailing windward comprises: a moveable track fixture; a fixed track configured to receive the track fixture; and a control system for securing the location of the track fixture within the fixed track relative to a bow of a sailboat.

[0012] In accordance with a further embodiment, a sailboat comprises: a hull; a mast; a plurality of sails, wherein at least one of the plurality of sails is a foresail; and a system for sailing windward comprising: a moveable track fixture; a fixed track configured to receive the track fixture; a control system for securing the location of the track fixture within the fixed track relative to a bow of a sailboat; and a forestay attached to the track fixture, the forestay extending from an upper portion of a mast of a sailboat to the moveable track fixture on a bow of the sailboat.

[0013] In accordance with another embodiment, a method of reducing leeway drift of a sailboat as the sailboat reaches an upwind objective, the method comprises changing the rela-

tive position of a foresail to a bow of the sailboat without changing the relative position of a mainsail and the foresail to one another.

[0014] In accordance with a further embodiment, a sailboat comprises: at least one hull; a mast; a plurality of sails, wherein at least one of the plurality of sails is a foresail; and a system for sailing windward comprising: a foresail beam attached to the mast of the sailboat at a mast end of the foresail beam and receives a leading edge of the foresail at a bow end of the foresail beam; and a foresail track, which extends from a starboard side to a port side of the sailboat and assists the foresail beam in movement from side to side.

[0015] In accordance with another embodiment, a sailboat comprises: two or more hulls; a plurality of sails, wherein at least one of the plurality of sails is a foresail; and a system for sailing windward, which includes a foresail track, which receives a leading edge of the foresail and extends from one of the two or more hulls to another of the two or more hulls.

[0016] In accordance with a further embodiment, a sailboat comprises: two or more hull; a plurality of sails, and wherein the plurality of sails includes one or more foresails; and a system for sailing windward, which includes two or more foresail tracks, each of the two or more foresail tracks is configured to receive a leading edge of a foresail, and wherein each of the foresail tracks extend from one of the two or more hulls to another of the two or more hulls.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] FIG. **1** is a perspective view of a sailboat with a system and method of adjusting the location and position of the foresail in accordance with one embodiment.

[0018] FIG. **2** is a top view of the sailboat of FIG. **1** with a system and method of adjusting the location and position of the foresail.

[0019] FIG. **3**A is a schematic view of a sailboat in accordance with one embodiment with a system and method of adjusting the location and position of the foresail in comparison with a sailboat without a system and method of adjusting the location and position of the headsail, jib, genoa, or spinnaker.

[0020] FIG. **3**B is a schematic view of a sailboat without a system and method of adjusting the location and position of the foresail.

[0021] FIG. **4** is a cross-sectional view of a portion of the track system on a sailboat with a system and method of adjusting the location and position of the foresail.

[0022] FIG. **5** is a top view of a sailboat with a system and method of adjusting the location and position of the foresail in accordance with another embodiment.

[0023] FIG. **6** is a top view of a multi-hulled boat with a system and method of adjusting the location and position of the foresail in accordance with a further embodiment.

[0024] FIG. **7** is a top view of a multi-hulled boat with a system and method of adjusting the location and position of the foresail in accordance with another embodiment.

[0025] FIG. **8** is a top view of a multi-hulled boat having one or more track systems for adjusting the location and position of the foresail in accordance with a further embodiment.

DETAILED DESCRIPTION

[0026] As described above, because of the design of the sails, a sailboat (or boat) **10** can sail to windward, in a direction no less than about 15 to 25 degrees from the wind, depending upon the design of the boat and the skill of the sailor. Headway directly upwind is achieved in a series of sequential maneuvers called tacks, in which the boat is first sailed windward with the wind over one side of the bow, and then turned through the wind so that the wind comes over the other side of the bow. In each tack, some headway upwind is achieved even though the boat does not move directly into the wind, and eventually the sailboat reaches an upwind objective after sailing a zig-zag course covering a distance greater than the straight line distance from the initial position to the upwind objective.

[0027] In addition, when a sailboat **10** sails to windward, the forces on the sails can be resolved into a thrust component that moves the sailboat forwardly through the water and a drift component that pushes the sailboat sideways in a downwind direction. The sailboat **10** therefore moves in a net direction that is forward, but also is slight downwind opposite to the net intended direction of movement. The sideways drift is called leeway.

[0028] The downwardly projecting centerboard or keel of the boat offers resistance to the leeway produced by the sideways sail force, but at least some leeway remains. This leeway is being constantly accumulated, as there is a downwind movement as long as the sailboat is being sailed into the wind. It can be appreciated that the leeway can significantly increase the time required for the sailboat to sail from its downwind starting position to the upwind objective, as it forces the sailboat to sail much further to make up for the accumulated sideways movement.

[0029] FIG. **1** shows a perspective view of a sailboat **10** with a system and method of adjusting the location and of at least one of the sails **40** of the sailboat **10**, and more particularly a system and method of adjusting the foresail **40** (or headsail, jib genoa, or spinnaker) in accordance with one embodiment. As shown in FIG. **1**, a sailboat **10** typically includes a hull **20** that sits in the water, a mast **50** extending upwardly from the hull **20**, and at least one sail in the form of a mainsail **30** supported by the mast **50** and a boom **60**, and an optional centerboard or keel **70** (FIG. **6**)) extending downwardly from the hull **20** into the water. Typically, most sailboats **10** also include a second sail **40** in the form of a foresail, jib, genoa, or spinnaker The sails **30**, **40** catch the wind and cause the hull **20** to move forwardly through the water. It can be appreciated that the sailboat can also include a mainstay **52**, which preferably extends from an upper portion of the mast **50** to the bow **42** of the sailboat **10**.

[0030] It can be appreciated that the use of the term "sailboat" **10** has a broad meaning and can include yachts, (large sailboats) and smaller vessels of many configurations, which use wind as the primary means of propulsion. Typically, some of the variations other than size are hull configuration (monohull, catamaran, and trimaran), keel type (full, fin, wing, centerboard etc.), purpose (sport, racing, cruising), number and configuration of masts, and the sail plan. The most common sailboat **10** is the "sloop" which features one mast **50** and two sails, a mainsail **30** and a foresail **40** or jib, genoa, or spinnaker. This simple configuration has been proven over time to be very efficient for sailing into the wind. The mainsail **30** is attached to the mast **50** and the boom **60**, which is a beam or spar capable of swinging across the sailboat **10**, depending on the direction of the wind. Depending on the size and design of the foresail **40**, the foresail **40** is called a jib, genoa, or spinnaker. Although not common, a sloop or sailboat **10** can

include two foresails from a single forestay **48** at one time (wing on wing). The forestay **48** is a line or cable running from near the top of the mast **50** to a point near the bow **42** (or front of the sailboat **10**). It can be appreciated that the forestay **48** is attached at either the top of the mast, or in fractional rigs between about ¼ and ⅛ from the top of the mast **50**. The other end of the forestay **48** is attached to the stern or bow **42** of the boat **10**. The forestay **48** can be made from stainless steel wire, a solid stainless steel rod, a carbon rod, a galvanized wire or natural fibers.

[0031] As shown in FIG. **1**, the mainsail **30** is attached to the mast **50** and the boom **60**. The boom **60** is typically a metal or wooden beam or spar, which is configured to stabilize the bottom of the mainsail **30**. The boom **60** is attached to the mast **50** at a lower end **32** of the mast **50** and extends towards the stern **43** (or back of the sailboat **10**). An outhaul or line **34**, which is part of the running rigging of a sailboat **10**, is used to extend the mainsail **30**, and control the shape of the curve of the foot of the mainsail **30**. The outhaul **34** runs from the clew (the back corner of the sail **30**) to the end of the boom. The line is pulled taut to the appropriate tension (to provide the desired shape to the foot), and then secured to a cleat on the boom **60**. The mainsail **30** is also attached to the top **36** of the mast **50**. The mainsail **30** extends aftward and is secured the whole length of its edges to the mast **50** and to the boom **60** hung from the mast **50**.

[0032] The foresail **40**, which is also known as a headsail, jib, genoa, or spinnaker is secured to the top **46** of the mast **50** and is typically secured to the bow **42** of the sailboat **10**. Typically, the foresail **40** is secured along its leading edge to a forestay **48** (strong wire) strung from the top **46** of the mast to the bowsprit **42** on the bow (nose) of the boat. Alternatively, the foresail **40** can be a genoa, which is a type of jib that is larger, and cut so that it is fuller than an ordinary jib. It can also be appreciated that fore-and-aft sails can be switched from one side of the sailboat **10** to the other, in order to alter the sailboat's course. When the sailboat's stern crosses the wind, this is called jibing; when the bow crosses the wind, it is called tacking. Tacking repeatedly from port to starboard and/or vice versa, called "beating", is done in order to allow the boat to follow a course into the wind.

[0033] It can be appreciated that a primary feature of a properly designed sail is an amount of "draft", caused by curvature of the surface of the sail. When the sail is oriented into the wind, this curvature induces lift, much like the wing of an airplane. Modern sails are manufactured with a combination of broadseaming and non-stretch fabric. The former adds draft, while the latter allows the sail to keep a constant shape as the wind pressure increases. The draft of the sail can be reduced in stronger winds by use of a Cunningham and outhaul, and also by increasing the downward pressure of the boom by use of a boom yang. A boom yang is a line or piston system on a sailboat used to exert downward force on the boom and thus control the shape of the sail. In British English, it is known as a "kicking strap". The yang typically runs from the base of the mast **50** to a point about a third of the way out the boom **60**. Due to the great force necessary to change the height of the boom **60** while a boat is under sail, a line based boom yang usually includes some sort of a pulley system. Hydraulic piston vangs are used on larger sailboats and controlled by manual or electric hydraulic pumps.

[0034] FIG. **2** shows a top view of the sailboat **10** of FIG. **1** with a system and method of adjusting the location and position of the foresail **40**. As described above, the foresail **40** is typically attached to the bow **42** of the sailboat **10** via the forestay **48**. In accordance with one embodiment, as shown in FIG. **2**, the foresail **40** can be attached to a track system **100**. The track system **100** is attached to the bow **42** of the boat **10** and is configured to change the location or position of the foresail **40** and the forestay **48** relative to the hull **20** of the boat **10** during a tacking maneuver.

[0035] It can be appreciated that tacking typically describes the position of a sailboat's bow with respect to the wind. For example, if the vessel's bow is positioned so that the wind is blowing across the starboard (right) side of the vessel, then the vessel is said to be on a starboard tack. If the wind is blowing across the port (left) side of the vessel, then the vessel is said to be on a port tack. It can be appreciated that by definition, this is opposite to the side, which the boom is carried, since it can be difficult when a boat is sailing downwind or nearly downwind from which side the wind is coming. In addition, a sailing vessel on a starboard tack always has the right-of-way over another sailing vessel on "port tack" by both the rules of the road and racing rules.

[0036] The track system **100** preferably includes a moveable track fixture **110**, upon which the forestay **48** is securely fixed or attached, a fixed track **120** configured to receive the track fixture **110**, and a control system **130** for securing the location of the track fixture **110** within the track **120** relative to the bow **42** of the boat **10**. In accordance with one embodiment, the control system **130** for securing the location of the track fixture **110** can include a winch **140**, a flexible wire or rod **150** attached to the track fixture **110**, and a guide system **160**. The winch **140** is preferably a mechanical device that is used to wind up the flexible wire or rod **150** (also called "cable"). In its simplest form, it consists of a spool and attached crank. The spool can also be called the winch drum. It can be appreciated that the winch **140** can include suitable gear assemblies and can be powered by electric, hydraulic, pneumatic or internal combustion drives. In addition, the winch **150** can include a solenoid brake and/or a mechanical brake or ratchet (not shown) that prevents the winch **150** from unwinding.

[0037] FIG. **3**A shows a schematic view of a sailboat **10** in accordance with one embodiment with a system and method of adjusting the location and position of the foresail **40** in comparison with a sailboat **10** without a system and method of adjusting the location and position of the foresail **40**. As shown in FIG. **3**A, the control system **130** is configured to adjust or change the relative location of the foresail **40** to the bow **42** of the boat **10** during tacking maneuvers, such that the bow **42** of the boat **10** can sail into the wind more than if the foresail **40** and forestay **48** is fixed to the bow of the boat **10**.

[0038] FIG. **3**B shows a schematic view of a sailboat without a system and method of adjusting the location and position of the foresail. As shown in FIG. **3**B, a typical sailboat **10** performs a tacking maneuver by sailing at an angle into the wind. However, as shown in FIG. **3**A, if the relative position of the foresail **40** to the bow **42** of the boat **10** is changed or altered without change the relative position of the mainsail **30** and foresail **40** to one another, the bow **42** of the boat **10** can sail more into the wind resulting in a shorter distance or path of travel for the sailboat during tacking.

[0039] FIG. **4** shows a cross-sectional view of a portion of the track system **100** on a sailboat with a system and method of adjusting the location and position of the foresail **40** in accordance with one embodiment. The track system **100** preferably includes a track fixture **110**, and a fixed track **120**. The

foresail **40** (not shown) is attached to the forestay **48**, which is secured to the track fixture **110** at an upper end **112**. As shown in FIG. **4**, the track fixture **110** can include an upper end **112**, a main body **114**, an upper wheel **116**, and a pair of lower wheels **118**. The fixed track **120** can include an upper groove **122** configured to receive the upper wheel **116** and a pair of lower grooves **124** configured to receive the pair of lower wheels **118**. The track fixture **110** moves from side to side (starboard to port) on the fixed track **120** resulting in the relative position of the forestay **48** (and the foresail **40**) to the bow **42** of the boat **10** facing in a more windward direction during tacking maneuvers.

[0040] FIG. **5** shows a top view of a sailboat **10** with a system and method of adjusting the location and position of the foresail **40** in accordance with another embodiment. As shown in FIG. **5**, a beam or spar system **200** comprised of a foresail track system **210**, a foresail beam **220**, and a pivot member **230**. The foresail beam **220** is attached to the pivot member **230** (or mast **50**) at one end (mast end) **222** and the other end (bow end) **224** of the foresail beam **220** moves from side to side (starboard to port). The foresail beam **220** is preferably attached to an optional foresail track system **210**, which assists the foresail beam **220** in movement from side to side. The forestay **48** (not shown) is preferably securely fixed or attached to the bow end **224** of the foresail beam **220**. In addition, a series of lines **226** can be used to control the bow end **224** of the foresail beam **220**.

[0041] It can be appreciated that the system as shown in FIG. **5**, the beam or spar system **200** can also include a control system **130** (not shown) comprised of a winch **140**, a flexible wire or rod **150** attached to the track fixture **110**, and a guide system **160**. As described above, the winch **140** is preferably a mechanical device that is used to wind a wire rod or wire rope (also called "cable"). In its simplest form, it consists of a spool and attached crank. In addition, it can be appreciated that the winch **150** can also include gear assemblies and can be powered by electric, hydraulic, pneumatic or internal combustion drives. The winch **150** can also include a solenoid brake and/or a mechanical brake or ratchet, which prevents the winch **150** from unwinding.

[0042] FIG. **6** is a top view of a multi-hulled boat **300** with a system and method of adjusting the location and position of the foresail in accordance with a further embodiment. As shown in FIG. **6**, the multi-hulled boat **300** consists of two or more hulls **310**, joined by a structure **320**, the most basic being a frame, or other suitable structure, which spans from one hull **310** to the other hull **310**. It can be appreciated that the multi-hulled sailboat **300** can be sail and/or engine-powered. In accordance with an exemplary embodiment, the two or more hulls **310** can have two differently shaped or sized hulls with lateral symmetry, or alternatively, two or more hulls with longitudinal symmetry. For example, a trimaran has a main hull **310** in the center and symmetric stabilizing hulls **310** on either side. The boat **300** also includes one or more rudders **302** to guide the boat **300**.

[0043] It can be appreciated that a multi-hulled sailboat can have several advantages compared to a single-hull boat. For example, by increasing the distance between the center of gravity and the center of buoyancy provides higher stability compared to boats with a single hull, which allows multi-hulls to have narrower hulls and thus substantially less wave-forming resistance, which in turn results in greater speed without applying more effort. In the case of boats under sail, stability serves to hold the vessel upright against the sideways force of the wind on the sails. This stability is provided in multi-hulls by the weight of the boat itself, in contrast to mono-hull sailboat, which typically uses an underwater counterweight, a ballasted keel for this purpose, especially on larger sailboats. Multi-hull sailboats are typically much wider than the equivalent mono-hull, which allows them to carry no ballast, and the reduced weight also makes them faster than mono-hulls under equivalent conditions. It can also be appreciated that multi-hulls typically will not sink or be abandoned if flooded, as opposed to ballasted mono-hulls who do indeed sink when flooded. In addition, the comfort of more onboard accommodation space and more level boats under sail offer substantially improved conditions for crew and passengers, which contributes to the greatly increasing popularity of multi-hull sailboats during the past few decades.

[0044] As shown in FIG. **6**, in accordance with an exemplary embodiment, the multi-hulled boat **300** includes a mast **330** and a track system **340**. As described above, a leading edge of the foresail **40** is attached to the track system **330**, which extends from one hull **310** to another hull **310**. The track system **340** preferably has an arc shape thereto, which mirrors the movement of a leading edge of the foresail **40** during tacking maneuvers, such that the distance **342** from the mast **330** to the track system **340** remains constant at all times. In accordance with one embodiment, as shown in FIG. **6**, the foresail **40** (FIG. **2**) can be attached to the track system **340**. The track system **340** is attached to each of the hulls **310** of the boat **300** and is configured to change the location or position of the foresail **40** relative to the hulls **310** of the boat **300** during a tacking maneuver. It can be appreciated that tacking typically describes the position of a sailboat's bow with respect to the wind. For example, if the vessel's bow is positioned so that the wind is blowing across the starboard (right) side of the vessel, then the vessel is said to be on a starboard tack. If the wind is blowing across the port (left) side of the vessel, then the vessel is said to be on a port tack. It can be appreciated that by definition, this is opposite to the side, which the boom is carried, since it can be difficult when a boat is sailing downwind or nearly downwind from which side the wind is coming. In addition, a sailing vessel on a starboard tack always has the right-of-way over another sailing vessel on "port tack" by both the rules of the road and racing rules.

[0045] The track system **340** preferably includes a moveable track fixture **110** as shown in FIG. **2**, upon which the forestay **48** is securely fixed or attached, a fixed track **120** configured to receive the track fixture **110**, and a control system **130** for securing the location of the track fixture **110** within the track **120** relative to the bow **42** of the boat **10**. In accordance with one embodiment, the control system **130** for securing the location of the track fixture **110** can include a winch **140**, a flexible wire or rod **150** attached to the track fixture **110**, and a guide system **160**. The winch **140** is preferably a mechanical device that is used to wind up the flexible wire or rod **150** (also called "cable"). In its simplest form, it consists of a spool and attached crank. The spool can also be called the winch drum. It can be appreciated that the winch **140** can include suitable gear assemblies and can be powered by electric, hydraulic, pneumatic or internal combustion drives. In addition, the winch **150** can include a solenoid brake and/or a mechanical brake or ratchet (not shown) that prevents the winch **150** from unwinding.

[0046] FIG. **7** shows a top view of a multi-hull boat **300** with a system and method of adjusting the location and position of the foresail **40** in accordance with another embodi-

ment. As shown in FIG. **7**, a beam or spar system **350** comprised of a foresail track system **340**, a foresail beam **352**, and a pivot member **354**. The foresail beam **352** is attached to the pivot member **354** (or mast **330**) at one end (mast end) **356** and the other end (bow end) **358** of the foresail beam **352** moves from side to side (starboard to port). The foresail beam **352** is preferably attached to a lower portion of the mast **330** and extends approximately horizontal to a deck **304** of the boat **300**. The foresail (not shown) includes a leading edge (or clew or free end), which is attached to the bow end **358** of the foresail beam **352**, a trailing edge, and a top edge (or head), which is generally attached to an upper portion of the mast **330**.

[0047] In accordance with another exemplary embodiment, the foresail beam **352** is preferably attached to an optional foresail track system **340**, which assists the foresail beam **352** in movement from side to side. The forestay **48** (not shown) is preferably securely fixed or attached to the bow end **358** of the foresail beam **352**. It can be appreciated that the system as shown in FIG. **7**, the beam or spar system **350** can also include a control system **130** as shown in FIG. **2** comprised of a winch **140**, a flexible wire or rod **150** attached to the track fixture **110**, and a guide system **160**. As described above, the winch **140** is preferably a mechanical device that is used to wind a wire rod or wire rope (also called "cable"). In its simplest form, it consists of a spool and attached crank. In addition, it can be appreciated that the winch **150** can also include gear assemblies and can be powered by electric, hydraulic, pneumatic or internal combustion drives. The winch **150** can also include a solenoid brake and/or a mechanical brake or ratchet, which prevents the winch **150** from unwinding.

[0048] FIG. **8** is a top view of a multi-hulled boat **300** having one or more track systems **340** for adjusting the location and position of the foresail in accordance with a further embodiment. As shown in FIG. **8**, the sailboat **300** includes a plurality (i.e., two or more) track system **340**, each of the track systems **340** configured to receive a foresail **40** (not shown). Each of the track systems **340** extends from one hull **310** to another hull **310**. The track system **340** preferably has an arc shape thereto, which mirrors the movement of a leading edge of the foresail **40** during tacking maneuvers, such that the distance **342** from the mast **330** to each of the track systems **340** remains constant at all times. The track systems **340** are attached to each of the hulls **310** of the boat **300** and are configured to change the location or position of the foresail **40** relative to the hulls **310** of the boat **300** during a tacking maneuver. In accordance with an exemplary embodiment, each of the track systems **340** can also include a beam or spar system **350** as shown in FIG. **7**. If one or more beam or spar systems **350** (FIG. **7**) are used, each of the foresail beams **352** are preferably at a different height relative to the deck **320** and/or mast **330** so that the foresail beams **352** can move freely. It can be appreciated that if the sailboat **300** has more than one foresail **40**, depending on the conditions, one or more of the foresails **40** can be used at any time, such as during tacking maneuvers.

[0049] It will be understood that the foregoing description is of the preferred embodiments, and is, therefore, merely representative of the article and methods of manufacturing the same. It can be appreciated that many variations and modifications of the different embodiments in light of the above teachings will be readily apparent to those skilled in the art. Accordingly, the exemplary embodiments, as well as alternative embodiments, may be made without departing from the spirit and scope of the articles and methods as set forth in the attached claims.

What is claimed is:

1. A sailboat comprising:
at least one hull;
a mast;
a plurality of sails, wherein at least one of the plurality of sails is a foresail; and
a system for sailing windward comprising:
a foresail beam attached to the mast of the sailboat at a mast end of the foresail beam and receives a leading edge of the foresail at a bow end of the foresail beam; and
a foresail track, which extends from a starboard side to a port side of the sailboat and assists the foresail beam in movement from side to side.

2. The sailboat of claim **1**, further comprising a control system for securing the location of the foresail beam within the foresail track system relative to a bow of the sailboat.

3. The sailboat of claim **1**, further comprising a series of lines, which control the bow end of the foresail beam.

4. The sailboat of claim **1**, wherein the foresail track system mirrors a movement of the bow end of the foresail beam's movement from starboard side to port side.

5. The sailboat of claim **1**, further comprising a pivot member, which attaches the foresail beam to the mast.

6. The sailboat of claim **1**, wherein the foresail beam is attached to a lower portion of the mast.

7. The sailboat of claim **2**, wherein the control system comprises a winch, a flexible wire attached to the moveably track fixture, and a guide system.

8. The sailboat of claim **7**, wherein the winch comprises a spool, which is attached to a crank.

9. The sailboat of claim **8**, wherein the winch further includes a brake or ratchet that prevents the winch from unwinding.

10. The sailboat of claim **1**, wherein the at least one hull comprises two or more hulls.

11. A sailboat comprising:
two or more hulls;
a plurality of sails, wherein at least one of the plurality of sails is a foresail; and
a system for sailing windward, which includes a foresail track, which receives a leading edge of the foresail and extends from one of the two or more hulls to another of the two or more hulls.

12. The sailboat of claim **11**, wherein the foresail track extends from a starboard side to a port side of the sailboat and assists the foresail in movement from side to side.

13. The sailboat of claim **12**, further comprising a control system for securing the location of the foresail within the foresail track system relative to a bow of the sailboat.

14. The sailboat of claim **13**, further comprising a series of lines, which control a bow end of the foresail.

15. The sailboat of claim **12**, wherein the foresail track mirrors a movement of the bow end of the foresail beam's movement from starboard side to port side.

16. The sailboat of claim **11**, further comprising a control system for securing the leading edge of the foresail within the foresail track.

17. The sailboat of claim **16**, wherein the control system comprises a winch, a flexible wire attached to the track fixture, and a guide system.

18. The sailboat of claim **17**, wherein the winch consists of a spool, which is attached to a crank, and wherein the winch further includes a brake or ratchet that prevents the winch from unwinding.

19. A sailboat comprising:

two or more hull;

a plurality of sails, and wherein the plurality of sails includes one or more foresails; and

a system for sailing windward, which includes two or more foresail tracks, each of the two or more foresail tracks is configured to receive a leading edge of a foresail, and wherein each of the foresail tracks extend from one of the two or more hulls to another of the two or more hulls.

20. The sailboat of claim **19**, further comprising:

a mast; and

at least two foresail beams attached to the mast of a sailboat at a mast end of the foresail beam, and wherein each of the at least two foresail beams are configured to receive the leading edge of the foresail at a bow end of the foresail beam.

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