This invention relates to improvements in sail handling equipment, and particularly to improvements in spinnaker poles and tackle used in conjunction with a spinnaker.

The spinnaker pole and jibing system of the invention, as set forth herein, has been tested on the Windigo, a yawl, and the invention is found to provide great safety, convenience and jibing speed features. The system includes port and starboard lines, which will be hereinafter referred to as jibing lines, connected to the respective clews of a spinnaker. These jibing lines are always connected to their respective clews and are threaded through the pole, and they are used individually for jibing the pole and drawing the respective clews to the outboard end of the pole.

Throughout the specification, the transmutable tackle and clew of the spinnaker will be referred to as port and starboard clews, regardless of their usual interchangeable or momentary common-use designations.

An object of the invention is to provide a spinnaker pole that is light in weight and easy to handle. Another object of the invention is to provide port and starboard jibing lines for swinging, or jibing, a spinnaker pole and drawing a respective clew of a spinnaker to the outboard end of the pole.

Another object of the invention is to provide a spinnaker pole comprising jibing line cleats carried on the inboard end of the pole.

Another object of the invention is to provide a spinnaker pole, carrying both port and starboard jibing lines and jamb cleats thereon on the inboard end of the pole, for controlling the selectively effective port and starboard jibing lines and permitting adjustment of the jibing lines, which adjustments are unaffected by variations in elevation adjustment of the spinnaker pole as by the spinnaker pole slide and track on the mast and as by adjustments of the topping lift, the fore guy and the after guy.

Another object of the invention is to provide an improved outboard pole-end fairlead or ferrule that is simple and efficient, and prevents chafing of the jibing lines as they pass therethrough.

Another object of the invention is to provide an improved spinnaker pole having an outboard pole-end fairlead- or ferrule, combined with an after guy and sheet ring which is larger in diameter than the ferrule and which serves as a positive stop for a connected jibing line upon control of the after guy or the fairlead with the ferrule of a spinnaker is drawn to the outboard end of the pole by the jibing line and the ring connected to the clew.

Another object of the invention is to provide an improved spinnaker pole having an improved outboard pole-end fairlead ferrule, port and starboard jibing lines threaded through said ferrule, and jibing line cleats mounted directly on the inboard end of the pole for alternately holding the respective clews of a spinnaker with its said ring against said ferrule, and providing for jibing lines that are constantly attached to their clews for instant jibing action at all times.

Still another object of the invention is to provide an improved spinnaker pole, with port and starboard jibing lines that are always attached to their respective clews of a spinnaker and that are always either controlling the after guy ring or standing ready for jib control of the pole, and with two stern lines that are always attached to their respective clews and that are always used as either an after guy or a controlling spinnaker sheet for controlling the outboard end of the spinnaker pole or the otherwise free clew end of the spinnaker, respectively.

Still another object of the invention is to provide an improved spinnaker pole and lines as expressed in the immediately preceding object, and, further, having a spare wire or other after guy line attached to the outboard end of the pole, preferably as by a ball providing access of the line on either the port or starboard side of the pole, and the free end of the line normally being held in reserve and taped or tied with light string to the outside of the pole, so that the free end of the line may be quickly torn from the pole, breaking the tape or string, and secured to either the port or starboard side of the ship in such a way as to assist the after guy.

Still another object of the invention is to provide a spinnaker pole and tackle thencefor wherein all normally used lines remain attached at all times, and wherein the jibing lines control the outboard end of the pole throughout all jibing operations.

The foregoing and various other objects, advantages and features of the invention will become more apparent and more readily understood upon reference to the following description:

It will be apparent, however, that those skilled in the art will be enabled to apply the teachings of the disclosure to various modifications as intended to be covered by the scope of the appended claims.

The description is directed to a preferred exemplary embodiment of the invention illustrated in the accompanying drawings forming a part hereof, in which:

FIGURE 1 is a sectional elevation view of the spinnaker pole showing principally the port side jam cleat carried on the pole, portions of the jibing lines, one spinnaker guy/sheet ring, and incidentally showing a portion of the mast and the spinnaker pole inboard elevation adjustment mechanism.

FIGURE 2 is a sectional elevation taken on line 2—2, FIGURE 1, showing principally port and starboard sheaves and related jam cleats mounted on the inboard end of the spinnaker pole.

FIGURE 3 is a fragmentary port side elevation of the inboard end of the spinnaker pole, showing a portion of the hollow pole and showing the inboard pole-end fitting, with portions removed to show details of a jam cleat and a sheave, which are mounted on the fitting.

FIGURE 4 is an elevational view of a jam cleat with its cover removed, showing a modified form of the jam cleat mechanism shown in FIGURE 3.

FIGURE 5 is a half section elevational view of the outboard end of the spinnaker pole, showing primarily the outboard pole-end fairlead ferrule with a guy/sheet ring drawn against the ferrule.

FIGURE 6 is a fragmentary elevational view of the inboard end of a spinnaker pole, showing a generally standard inboard fitting and a spinnaker bell with a sheave and jam cleat carried by the bell.

FIGURE 7 is a fragmentary elevational view of the inboard end of a spinnaker pole, showing a generally standard spinnaker bell and an inboard pole-end fitting with a sheave and jam cleat carried by the fitting.

FIGURE 8 is a schematic top plan view of a ship, showing principally a proportionally exaggerated representation of the spinnaker pole in a port side position, primarily under control of the fore guy, the after guy and the port side jibing line and guy/sheet ring.

FIGURE 9 is a schematic top plan view, like FIGURE 8, but showing the spinnaker pole in starboard side position and under control of the starboard side jibing line and after guy instead of their port side counterparts.

The spinnaker pole and tackle arrangement, which com-
prises the instant invention, is extremely useful in all sailing crafts, particularly such crafts of sizes for ocean racing and day racing, on which a spinnaker is used and jibing speed and safety are of paramount importance. Because of the convenience which this invention provides, the instant invention is found particularly useful in the handling of the spinnaker pole, and the use of the various tackle to the instant invention is also very desirable on cruising trips.

Previously, many different methods of moving or jibing a spinnaker pole from one side of a ship to another have been used, and these various methods included many unnecessary manual operations, bodily handling of the spinnaker pole, and the use of various tackle. The pole was manually alternately detached and attached to the swinging end of the pole under the headstay during each jibe. The unnecessary manual operations, the bodily handling, and the detachment and attachment of lines are found to be unnecessary in the system of the instant invention. As will be described, the instant invention provides constantly attached jibing lines, which are individually operable for jibing the spinnaker pole throughout its swing from one side to the other and for drawing the respective clew to the outboard end of the pole.

In 1949, a brief resume of the Vim jibing equipment and manner in which their pole was handled will be set forth before a detailed description of this invention.

Vim was equipped with a wire after guy and a rope spinnaker sheet on both the port and starboard sides, and these lines remained connected to the guy/sheet ring of the respective clews, at all times. The outboard pole end fitting was strung on the effective wire after guy, which was trimmed to pull the outboard end of the pole from under the headstay to the respective guy/sheet ring. In order to jibe, the effective wire after guy was slackened to permit a man in the bow to pull the fore guy and swing the outboard end of the pole and the slackened wire amidship under the headstay where he could pull the plunger in the outboard fitting and release the previous wire guy. Another man, having brought the slack opposite wire guy forward, placed this wire guy under the plunger in the outboard fitting and the first man released the plunger. At this point, the recently attached wire guy was pulled in to complete the jibe and the topping lift was pulled in to erect the pole on the new windward side, as the ship was turned to take up the new tack.

From the foregoing, it can be seen that the Vim jibing method required two men under the headstay, in the bow of the ship, and these men were required to handle the outboard free end of the pole, pulling in on the foreguy and starting the pole out on the opposite side, in addition to operating the plunger and changing the wire after guys. Also, incidentally, two more men in the stern quarter had to synchronize their control of the wire guys with the operations of the men in the bow, and the men in the stern quarter had to await word that the wires had been changed before completing the jibe.

Though the Vim jibing method was advanced over previous methods, their method was comprised of at least three definite steps, in respect to time, after the jibe was begun, before the men under the headstay could pull the outboard end of the pole amidship by slackening of one wire after guy and pulling in on the fore guy, (2) changing the wire guys, and (3) swinging the outboard end of the pole out on the new windward side by trimming of the second wire after guy. Also, in heavy seas, the two men of the other side were being kept busy for men to work, and, for this reason and other reasons which may become more apparent later, the instant invention is found to be most desirable since all jibing control is performed amidship, near the mast, by one continuous motion and the jibing operation is not affected or impeded by any incidental trimming of the after guy or spinnaker sheet.

Since the general jibing process, particularly the handling of the fore guy and topping lift, of the jibing system comprising the instant invention is generally the same as that used by Vim and adapted by many other similar ships during the demonstration, this paper will not discuss the general jibing process. However, the instant jibing control and the particularities of the spinnaker pole, the combined after-guy/spinnaker-sheets the jibing lines and the related jam cleats of the invention will be described.

The spinnaker pole (FIG. 1) is preferably constructed of a stainless steel tube, and comprises an inboard pole end fitting 2 secured on the inboard end of the pole and an outboard pole end fairlead or ferrule 3 secured to the outer end of the pole. The inboard and outboard pole end fittings, and other hardware used on or in conjunction with the pole, are preferably constructed of stainless steel or other noncorrosive durable material.

A port side sheave 4 and related jam cleat 5, and a starboard side sheave 6 (FIG. 2) and related jam cleat 7 are preferably constructed and assembled as an integral part of the jibing pole end fitting, however, they could be merely carried by the pole or by a spinnaker bell, if such a bell is used, without departing from the spirit of the invention.

The port and starboard sheaves 4 and 6, respectively, are identical and, therefore, a description of one will suffice for the other. A stud 8, extending from the respective port and starboard sheave, is secured to the end fitting and carries a rotatable pulley wheel 9 thereon. A stud support and jib line guide plate 10, having a hole for receiving stud 8, is assembled onto stud 8 and is secured to a projection 11 of the inboard pole end fitting. The plate may also be equipped with or more screws, such as machine screws 12, FIGURE 1.

The jam cleats are situated in convenient alignment generally below their respective sheaves, so that a jibing line may pass through the sheave and jam cleat therefor as the line is reeved in hand or by a winch, which may be mounted on the deck beneath the inboard end of the pole. The jam cleats are, in effect, one way brake means, which permit a line drawn downwardly thereforth above to be helded in, but prevent the line from being pulled outwardly, as by the sail and the effect of the wind.

The port and starboard jam cleats 5 and 7 (FIG. 2) are identical and, therefore, a complete description of one will serve to describe the other.

Each jam cleat, such as 5 (FIG. 1), is comprised of a jam cleat mechanism 13, and an anvil 14 against which the jibe line may be pressed by the jam cleat mechanism to bring a second guy to the y, in the jibe line, the ship as the jibe line is passed between the jam cleat mechanism and the anvil, and to render the jam cleat ineffective, to permit the line to be paid out, the line is merely pulled sideways out from between the jam cleat mechanism and the anvil, or in other words, if the jibing line is passed between the jam cleat and situated generally behind the anvil, to the right of the
8,228,372 5 anvil 14 as viewed in FIGURE 1, where the line may pass freely through the sheave. The anvil 14 may be constructed as a projection of the inboard end fitting or, as illustrated, may be formed as a segmental block, which may be secured to the fitting as by machine screws 15 passed through the block and screwed into the fitting. Each jam cleat mechanism is preferably comprised of a main frame member 16 (FIG. 2) and a cover plate 17, which are secured to the inboard pole end fitting 2, as by machine screws 18 (FIG. 19) invid for protecting the mechanism and for protecting the hands of the operator. The frame member 16 (FIG. 3) carries a braking wheel of the one-way brake means, which together form the major part of the jam cleat mechanism.

An inclined braking surface portion 19 is formed on or carried by frame member 16, and the surface portion 19 is slightly inclined toward the anvil 14, as it extends upward. A wheel 20 lies between surface portion 19 and the anvil 14, and its diameter is such that the wheel will lightly touch the lower extent of the surface portion 19 and the line, which may be inserted between the wheel and the anvil. The wheel and surface portion are preferably constructed as a gear and mating rack, respectively, the teeth of which increase the braking action, aid in gripping the line and keeping the wheel in good tracking alignment as the line tends to move, upon it, the wheel, rolling the wheel upwardly, and wedging the wheel and line between the rack and the anvil. A ball type keeper 21 is provided for preventing the gear wheel 20 from dropping out of the jam cleat when the line is removed therefrom. The keeper is preferably constructed of a heavy wire, which is much smaller in diameter than the center hole of the gear wheel, so that it does not control or affect the tracking of the gear wheel while the wheel is in operation. The keeper 21 extends through the center hole of the gear wheel and is bent over to form two ball arms, which follow both discoidal faces of the gear wheel. The remote ends of the ball arms extend in a direction to give the proper spacing between the projections 30, in milled clearance areas 22 provided therefor in both sides of the frame, and the ends of the ball arms are bent over inwardly and inserted into opposite ends of a ball plate 35 to form the end of the frame of the jack cleat. From the foregoing, it can be seen that the keeper 21 holds the gear wheel 20 in readiness, when the line is not in the jam cleat, and, upon insertion and upward movement of a line, the jam cleat, the gear wheel 20 rolls up the incline rack 19 and the ball arms may pivot angularly about the pin 22 in the milled clearance area 22 as the gear wheel lifts up the ball keeper 21. As the gear wheel 20 rolls upwardly on the inclined rack 19, the gear wheel bites the line and, through the effect of the incline, wedges the line against the anvil 14 and stops the upward movement of the line. Also, it can be seen that downward movement of the line, through the jam cleat, permits the gear wheel to move down the inclined rack and to release the line.

If the use of various lines having widely differing diameters is anticipated, a modified form of jam cleat, utilizing a spring loaded one-way brake wheel may be preferred. In the modified jam cleat shown in FIGURE 4, the frame member 16a is formed to receive a light torsion type spring 21a, which is used instead of the previously described keeper 21 shown in FIGURE 3. The helically wound spring type spring 21a (FIG. 4) is assembled into a hole 160 through the frame member 16a and one end of the spring is anchored in one of the holes X, Y and Z in the frame member. The holes X, Y and Z are displaced angularly about the hole 160 to provide for differential tension adjustment of the spring. The line is removed therefrom, which serves as a pivot arm for the wheel 20a. Like in the first preferred form described previously, the center hole 20b of the gear wheel is larger in diameter than the spring stock in order to prevent the spring from affecting the tracking of the gear wheel. The spring, assembled as illustrated and described, lightly urges the gear wheel up the inclined rack and toward the anvil 14a where it will grip nearly any size line that may be inserted therebetween.

In order to insert a line in this cleat, the line must be drawn downwardly against the discoidal side face of the gear 20a to urge the gear down the incline, against the tension of the spring, sufficiently to permit entrance of the line between the gear and the anvil 14a. When the line is in this jam cleat, the line may be drawn downwardly through the cleat, but the gear wheel under influence of the spring and the anvil prevent the line from being pulled upwardly, in much the same manner as for the first preferred jam cleat described previously.

Under certain circumstances, it may be found to be convenient to employ the use of a spinnerake pole bell, as a possible aid in rigging the spinnerake pole and in removing the pole from the mast. However, it should be remembered, the instant invention makes it unnecessary to disconnect the spinnerake pole from the mast for any circumstances, except for removal of the pole from the rigging. In any case, it should be remembered, a major facet of the invention lies in the fact that the herein previously described port and starboard sheaves and jam cleats are generally speaking carried by the spinnerake pole, or, more particularly as a first preferred form of the invention, by the inboard pole end fitting, which is an integral part of the pole, as described. However, in a second preferred form, shown in FIGURE 6, the port and starboard sheaves 4 and 6, respectively, and the associated jam cleats 5 and 7, previously described herein, are carried as integral parts of a spinnerake pole bell 23. The spinnerake pole bell is constructed with a generally funnel like cavity for receiving a mating inboard fitting 24, which is fixed to the inboard end of the pole 1. Near the rightmost end of the fitting 24, a vertical slot is formed in one side of the fitting, and a pin 25, inserted in a suitable hole therefor in the bell 23, is a part of the inboard pole end fitting. Therefore, whenever the inboard pole end fitting (such as fitting 2, FIG. 1) is referred to herein, the inboard pole end fitting should be taken as including a spinnerake pole bell, if such a bell is preferred.

A tongue 26 (FIGS. 1 and 3) is provided on the extreme inboard end of the inboard pole end fitting 2 (FIG. 3), or on the spinnerake pole bell, such as bell 23 or 23a (FIGS. 6 and 7) in cases where a spinnerake pole bell is used. The tongue 26 is assembled into a vertical slot therefor in a clevis 27 (FIG. 1) and is held therein, in place, by a bolt 28, which serves as a pivot arm for the pole as the outboard end thereof is moved upwardly or downwardly in respect to the clevis, as in the pole dipping process for example.

The clevis 27 is part of a spinnerake slide means and elevation control means for adjusting the elevation of the inboard end of the spinnerake pole, this adjustment being generally made to suit the set of the spinnerake. Clevis 27 is fitted between forwardly extending lower and upper clevis projections 29 and 30, respectively, of a spinnerake slide 31. A clevis pin 32 is assembled through vertical holes therefor in the projection 30, the clevis 27 and the
A spinnaker slide 33, being preferably generally rectangular in horizontal cross-section, is longitudinally situated vertically on the forward face of the mast 34. A spinnaker slide 33, being narrow in horizontal cross-section than the track 33, is situated between the track 33 and the mast 34 to provide clearance from the mast for the slide 31 and the track and the spacer strip are rigidly secured to the mast as by a suitable series of bolts 36.

The spinnaker slide 31 completely embraces the vertical sides of the track 33, except for a vertical clearance area on the mast side of the track for the spacer strip 35, and the slide is mounted on the track 33 for vertical sliding adjustment thereon. A stop 37 is secured in any well known manner to the track 33 near the lower end of the track, and another stop (not shown) is secured near the top of the track for preventing adjustment of the slide 31 beyond guidance control extent of the track 33.

A well known toothed sprocket assembly 38 is in part, morticed into the mast 34 below the track 33, in vertical alignment with the track, and the housing of the assembly is secured to the mast as by screws 39. Another such sprocket, or a pulley, assembly (not shown) is mounted in a like manner above the upper extent of the track 33. A roller chain 40, being connected to an upper jibing eye in the head of clevis pin 32 and to a downwardly extending eye in the spinnaker slide 31, is threaded up the forward face of the track 33, over the upper sprocket assembly (not shown), down the inside of the mast, under and in engagement with the lower toothed sprocket of the lower sprocket assembly, and connected in closed circuit with the clevis pin and spinnaker slide. A nut 41, lying against the lower side of the lower clevis projection 29 and being threaded onto the lower end of the clevis pin 32, is provided for drawing the clevis pin downwardly relative to the slide for adjusting and maintaining proper tension on the roller chain. The chain and sprocket arrangement is hereinabove described as being assembled on a hollow mast, however, a similar arrangement may be used on a solid mast with the entire mechanism being mounted externally on the forward face of the mast.

A crank handle 42 may be coupled, in any well known manner, with the toothed sprocket of the lower sprocket assembly 38 for rotating the toothed sprocket and the chain 40, in its circuit either clockwise or counterclockwise, for raising or lowering, respectively, the spinnaker slide 31 and thereby adjusting the elevation of the inboard end of the spinnaker pole. Any well known means, such as a removable pin or releasable pawl, may be employed for holding the lower sprocket and the chain in any desired position of adjustment and for permitting readjustment thereof. From the foregoing, it can be seen that the spinnaker pole is adjustable upwardly or downwardly without affecting the relationship of the sheaves and jam cleats on the pole.

The outboard fairlead collar or ferrule 33, on the left end of the pole as shown in FIGURES 1 and 5, is provided for protecting the jibing lines and afterguy which may come in contact therewith from chafing damage and it is also provided for preventing damage to the pole which might result from a guy or sheet ring being drawn in hard, for example. The ferrule 33 is preferably made of stainless steel, since this material may be smoothed to present a relatively frictionless surface to the lines drawn there through as will be explained, and since it is durable and resists damage from impact of other hardware. The illustrated form of the ferrule 33 (FIG. 5) is constructed primarily of tubular material, which is bent in a circle, welded and polished, to provide a smooth and concentric fair lead. Tubular material is used in order to make the ferrule light in weight and still provide a relatively large radius about which the jibing lines may be drawn. A cylindrical flange 43 is welded to one discoidal face of the ferrule 33 and the unit thus formed is secured to the outboard open end of the spinnaker pole 1, as by rivets 44 in holes therefor in the pole and the flange.

A port side guy and sheet ring 45 (FIGS. 1 and 5) and an identical starboard guy and sheet ring 46 (FIG. 8), having larger major diameters than the minor diameter of the ferrule 33, are so constructed as to be passed by either of the ferrule 33 rings 43 drawn to the outboard end of the pole by their respective jibing lines. A swivel snap hook 47, connected to the port side ring 45 (FIG. 1), is snapped into a cringle 48 in the port side clew 49 of the spinnaker. An identical swivel snap hook 50 (FIG. 8) connects the spinnaker's starboard clew 51 to the starboard ring 46. Incidentally, the top corner of the spinnaker may be attached to the mast, above the top of the headstay, in any well known manner, such as by a halliard not shown herein.

A port side fairlead hole 52 (FIG. 1) and a starboard fairlead hole 53 are situated, in respective sides of the pole 1, on a direct line with the outboard fairlead ferrule 33 and the respective port and starboard sheaves 4 and 6. The fairlead holes thus provide unobstructed individual passage ways for the jibing lines as they pass through the outboard ferrule, through the inside of the pole, out through their respective fairleads and to their respective sheaves 4 and 6 on the outside of the inboard end of the pole.

A port side jibing line 54 is connected to its respective guy and sheet ring 45, and it extends through the outboard ferrule 33, through the inside of the major part of the pole 1, passes out through its fairlead hole 53 and through the sheave 4. Also, when line 54 is the effective jibing line, it turns through the sheave 4 and is held securely in the jam cleat 5, as shown in FIGURE 1. Similarly, a starboard jibing line 55 is connected with the ring 46 (FIG. 8), and it extends through the outboard ferrule 31 through the pole 1, out through its fairlead hole 53 (FIG. 1) and through its sheave 6, (FIG. 2) and is held in its jam cleat 7 when it is the effective jibing line.

An after guy 56 (FIG. 1) is connected to the port guy and sheet ring 45, and is secured to a snatch block 57 (FIG. 8) on the counter and trimmed to properly position the spinnaker pole 1, when the pole is on the port side and the ring 45 is held against the ferrule 3. The after guy 56 becomes the spinnaker sheet for controlling the clew 49, when the pole is on the starboard side, as shown in FIGURE 5. Similarly, an after guy 58 is connected to the starboard guy and sheet ring 46, and is secured to a snatch block 59 on the counter and it is trimmed to properly position the spinnaker pole 1 on the starboard side. Also, the after guy 58 becomes the spinnaker sheet for controlling the starboard clew 51 (FIG. 8), when the pole 1 is on the port side as shown.

The topping lift 60 (FIG. 1) is connected to the outboard end of the pole 1 by a pad eye 61 (FIGS. 1 and 5) forming a part of a band 62 fitted around the pole and fixed thereto, near the outboard end of the pole, as by rivets 63. An opposing pad eye 64 is fixed to the bottom of band 62 and is provided for the foreguy 65 which is connected thereto.

Normally, no wire guys are used as a part of the spinnaker pole and tackle of the instant invention since it is found to be unnecessary and it is more convenient to use the spinnaker sheets after guys and vice versa. However, one wire guy 66 (FIG. 1) is provided, but this guy is normally held in reserve for optional use on either the port or starboard sides to support the after guy 56 (FIG. 8) or 58 (FIG. 9), only when the wind is strong and/or the ship is rigged for extreme close reaching with the wind.
The reserve after guy support wire 66 (FIG. 1) is connected, at its forward end, to a bail 67 (see also FIG. 5) which in turn is secured to the band 62. The bail 67 is located just aft of the fore guy pad eye 64, and is arceduate in general form and follows the under side of the band 62 concentrically and in spaced relation thereto. The upper end of the bail are bent inward and preferably welded to the respective port and starboard sides of the band 62 so as to become a part thereof. The guy 66 (FIG. 1) is preferably loosely connected to the bail so that it may be easily drawn along the bail to either the port or starboard end thereof. The guy 66 is normally strung along the outside of the pole 1 and tapered or tied by light string 68 thereto. When it is desired to add rigidity to the position of the pole as determined by the usual after guy, the after end of guy 66 is pulled free of the pole, breaking the tape or string 68, and it is secured to a line (not shown) which in turn is drawn to a block 69 or 70 (FIGS. 8 and 9) located aft of the pole on the port or starboard side, respectively, as required. When taken out of use, the aft end of the guy 66 is again secured to the pole as by the tape or string 68 (FIG. 1).

When the wind is from the port quarter, as indicated by the arrow "W" in FIGURE 8, the pole is rigged to port, as shown, with the ring 45 drawn and held tight against the outboard pole end ferrule 3 by the port jibing line 54 and the jam cleat 5, respectively, as shown in FIGURE 1. In this position of the pole, the after guy 56 (FIG. 8), the fore guy 65, and the topping lift 60 are trimmed to position the pole and therefore the port side clew 49, as desired. The spinneret sheet 58 is trimmed to control the leeward clew 51. In this position of the pole, the starboard jibing line 55 hangs loosely from the ring 46 and the ferrule 3, across the bow, but it remains attached as described, and ready to jibe the pole from port side to starboard side.

In order to jibe the pole from port to starboard, simultaneously the topping lift 60 is slackened to dip the pole, the port jibing line 54 is pulled out of the jam cleat 5 to permit the portside clew 49 to pull the ring 45 away from the ferrule 3, and the starboard jibing line 55 is hauled in through its jam cleat 7 to swing the pole 1 clockwise under the headstay and to bring the ring 46 in to stop against the ferrule 3 as shown in FIGURE 9. When the pole 1 passes under the headstay during the jibing action, the topping lift 60 is again hauled on, to elevate the pole to its original horizontal position on the starboard side. In this position of the pole, the ring 46 is held against the ferrule 3 by the starboard jibing line 55 and the jam cleat 7, while the port clew 49 and ring 45 are held to leeward by the wind. Upon general positioning of the pole, the set of the spinneret may be checked and adjusted by slide 31 (FIG. 1) and the track 33 on the mast, by the topping lift 60, fore guy 65 (FIG. 9), after guy 58 and the spinneret sheet 58 to suit the conditions of the new tack and the wind at the starboard quarter as shown.

In order to swing the pole again back to the port side a directly opposite jibe, from the one just described, it is performed. To swing the pole counterclockwise from the position shown in FIGURE 9, the topping lift ishandled in the same way as for the previous jibe, and the port jibing line 54 is put in its jam cleat 5 and, simultaneously, the starboard jibing line 55 is pulled from its jam cleat 7 and the port jibing line 54 is pulled in through its jam cleat to jibe the pole and properly position the clew 49 with ring 45 against the ferrule 3, as shown in FIGURE 8.

From the foregoing, it can be seen that either jibe is accomplished easily and quickly, the outboard end of the pole being swung up and remaining constantly under control of the effective jibing line, the topping lift and the fore guy, and the spinneret remaining full, with its clews adjusted by their respective spinnaker sheets throughout the operation.

It will be noted that the construction shown and described will serve admirably to accomplish the objects stated above. It is to be understood, however, that the constructions disclosed above are intended merely as illustrative of the invention and not as limiting its various modifications: therefore may be made without departing from the invention as defined by a proper interpretation of the claims which follow.

We claim:

1. A spinnaker pole means comprising an outboard fairlead means having a fixed diameter, a jibing line strung through said fairlead means, a guy and sheet ring means connected to the outboard end of said jibing line, said ring means having a larger diameter than the diameter of said fairlead means, and a jam cleat means secured on the inboard end of said pole means and being constructed and arranged for receiving said jibing line and thereupon permitting said jibing line to be drawn inboard therethrough but preventing said jibing line from being pulled outward therethrough, whereby said jibing line may be drawn in an inboard direction through said cleat means until said jibing line is stopped by contact of the connected said ring means with the smaller diameter said fairlead means whereupon said jam cleat means holds said jibing line and said ring means as so drawn.

2. An adjustable spinnaker pole means having a topping lift adjustment means, a fore-guy adjustment means, said after-guy adjustment means and an inboard pole end elevation adjustment means, an outboard fairlead means carried by the outboard end of said pole means, a jibing line threaded in an inboard direction through said fairlead means, and a cleat means constructed and arranged for receiving an inboard portion of said jibing line and mounted inboard from said fairlead means on said pole means for maintaining adjustment of said jibing line therein, whereby adjustment of said jibing line in said cleat means is held by said cleat means regardless of further adjustment of any one or more of said topping lift adjustment means, said fore-guy adjustment means, said after-guy adjustment means and said inboard pole end elevation adjustment means.

3. On a sailing ship having a mast and a spinnaker secured at its top corner to said mast as by a halliard, an adjustable elevation control means secured to said mast for variably adjusting elevation of an inboard portion of said spinnaker pole, a spinnaker pole connected at its inboard end to said elevation control means and subject to control by said elevation control means, a fairlead ferrule carried on the outboard end of said pole, a jibing line connected to a clew of said spinnaker and extending inboard through said ferrule, and a jam cleat carried on said pole for receiving an inboard portion of said jibing line and for therethrough holding said clew to said ferrule upon adjustment of said jibing line through said jam cleat, whereby the said clew is properly held to the outboard end of said pole and remains unafflicted by adjustment of the inboard end of said pole by said elevation control means.

4. On a sailing ship, a spinnaker having port and starboard clews, in combination with a guy and sheet port ring connected with said port clew and having a fixed diameter, a guy and sheet starboard ring connected with said starboard clew and having a fixed diameter, an after-guy and sheet port line connected with said port ring, an after-guy and sheet starboard line connected with said starboard ring, a spinnaker pole extending generally forwardly and connected on its inboard end to the mast of said ship for swinging motion angularly from side to side, an outboard fairlead pole end ferrule carried by the outboard end of said pole and having a fixed diameter smaller than said port and starboard rings so that said rings will not pass therethrough; port and starboard jam cleats carried by said pole, between said ferrule and the inboard
end of said pole, and each said jam cleat being constructed and arranged to receive a jibing line for permitting such a jibing line to be drawn inboard therethrough but for holding such a jibing line from being pulled in an outside ring and a cylindrical flange, one axial end of which is welded to a discoidal face of said ferrule, said flange being of a diameter suitable for mating with said body portion and being secured to the outboard end of said body pole, said ferrule providing smooth inner and outer surfaces and the entire outboard length of said body portion, an inboard pole end fitting, one end of which is secured to the inboard end of said body portion and the other end of which is formed as a connecting means for securing said inboard pole end fitting and therefore said pole to said mast of said ship; port and starboard jibing lines with sheaves mounted externally on their respective sides of said inboard pole end fitting; port and starboard fairlead holes formed in generally respective sides of said body portion for providing straight line access between the axial center of said ferrule and the respective said sheaves and providing free passage-ways for said pole and jibing lines between said ferrule and their respective sheaves; and port and starboard jam cleats, mounted externally on respective sides of said inboard pole end fitting, constructed and arranged for receiving a respective one of said jibing lines and thereupon permitting the jibing line to be drawn therethrough but for preventing the jibing line therein from traveling outward.

6. On a sailing vessel having a mast; a spinaker secured as by a halliard to said mast near the top thereof and having a port clew and a starboard clew; a guy and sheet port side ring secured to said port clew; a guy and sheet port side ring secured to said port clew; a guy and sheet port side ring secured to said port clew and secured to the inboard end of a port side block on the counter of said vessel for controlling said port block; a spinner pole comprising an inboard pole-end fairlead ferrule, and port and starboard jam cleats mounted inboard from said ferrule on said pole; a jibing pivot means secured to the inboard end of said pole and to a lower portion of said mast for connecting said pole to said mast and for lifting said pole; a port jibing line connected to said port side ring and threaded inboard through said ferrule for jibing said pole to port and drawing said pole side ring against said ferrule upon drawing of said port jibing line inboard through said ferrule, said port jibing line being engageable with said port jam cleat for being held thereby and for holding said port side ring and said pole, and a starboard jibing line connected to said starboard ring and threaded inboard through said ferrule for jibing said pole to starboard and drawing said starboard ring against said ferrule upon drawing of said starboard jibing line inboard through said ferrule, said starboard jibing line being engageable with said starboard jam cleat for being held thereby and for holding said starboard ring and said starboard clew to the outboard end of said pole; whereby said pole may be jibed to one side or the other for controlling a respective clew, in respect to said mast, by merely drawing in the respective one of said jibing lines through its respective jam cleat while permitting the other jibing line to run free of its respective jam cleat.

7. On a sailing vessel having a mast, a headstay secured at its upper end near the top of said mast and secured at its lower end to the bow of said vessel, a spinaker secured as by a halliard to said mast and adjusting means for being fixed against said sail in the relation of said sail, a guy and sheet port side ring secured to said port clew, and for the outboard end of said pole; whereby said pole may be jibed to one side or the other for controlling the respective clew, in respect to said mast, by merely drawing in the respective one of said jibing lines through its respective jibing cleat while permitting the other jibing line to run free of its respective jibing cleat.
line means and upon contact of its one of said rings with said fairlead.

9. A spinnaker pole means, inboard and outboard elevation control means for differentially adjusting the generally horizontal attitude of said pole means to suit the set of a spinnaker, fairlead means carried on the outboard end of said pole means, jibing line means connected to a clew of the spinnaker and slung through said fairlead means, and being operable for jibing the outboard end of said pole means, and cleat means carried on said pole means for securing said jibing line means on said pole means upon completion of a jibe operation of said pole means, and said anvil means for controlling the respective said jibing line means in operated position irrespective of adjustment of said elevation control means.

10. A hollow pole means; an outboard pole end fitting comprising a fairlead ferrule formed of tubular material bent in a circle and welded, forming a relatively light weight endless hollow ring, and a cylindrical flange, one axial end of which is welded to a discoidal face of said ferrule and said flange being of a diameter suitable for mating with said hollow pole means; and connecting means for securing said flange to the mating outboard end of said pole means.

11. A spinnaker pole outboard pole end fitting comprising a fairlead ferrule formed of tubular material bent in a circle and the ends of said tubular material being connected together, forming a relatively lightweight hollow endless ring through which jibing lines may be drawn with a minimum between said ends and connecting means for securing said ferrule to the outboard end of a spinnaker pole.

12. On a sailing ship having a mast, and a spinnaker secured as by a halliard to an upper portion of said mast; a spinnaker pole comprising an elongated tubular main body portion, an outboard pole end fitting comprising a fairlead ferrule formed of tubular material bent in a circle and welded, forming an endless hollow ring, a cylindrical flange, one axial end of which is welded to a discoidal face of said ferrule, said flange being of a diameter suitable for mating with said body portion, and being secured to the outboard end of said body portion, said ferrule providing smooth inner and outer surfaces on the entire outboard end of said body portion and an inboard pole end fitting, one end of which is secured to the inboard end of said body portion and the other end of which is formed as a connecting means for securing said inboard pole end fitting and therefore said pole to said mast of said ship; port and starboard jibing lines passing therethrough between said ferrule and their respective sheaves; and port and starboard jam cleats each for receiving an inboard portion of its respective said port or starboard jibing lines and thereupon permitting its said jibing lines to be drawn inboard in a first direction but preventing its said jibing line from being drawn more than a slight amount in an outboard second direction, each one of said cleats comprising a stationary anvil means and an opposing stationary jibing means spaced from said anvil means for providing a line passageway between said jibing means and said anvil means comprising a main frame member, an inclined braking surface portion formed on said member facing said anvil means and being inclined toward said anvil means as said surface portion extends along said passageway in said second direction, a wheel means having a center hole and normally contacting said surface portion and having a diameter sufficient to extend into said passageway for contacting a line therein, and a pivoted keeper means pivotally connected on one of its ends to said frame member and its other end extending through said center hole of said wheel means for holding said wheel means against said surface portion and permitting rolling of said wheel generally in said first and second directions along said surface portion, whereby a respective one of said jibing lines drawn slightly in said second direction through said passageway rolls said wheel means in said second direction for wedging said wheel means and the line between the inclined said surface portion and said anvil means for controlling the respective said jibing line and therethrough controlling the respective said clew of said spinnaker, and whereby movement of the said line in said first direction releases said line for further movement of said line in said first direction.

13. A spinnaker pole inboard fitting comprising port and starboard jibing line sheaves carried by said fitting, and port and starboard jam cleats mounted on said fitting in alignment with said port and starboard sheaves, respectively, for receiving respective port and starboard jibing lines and upon receiving such a jibing line in one of said jam cleats for holding that jibing line relative to said fitting.

14. On a sailing ship having a mast, a spinnaker pole inboard fitting comprising connecting means for connecting said fitting to said mast, and comprising at least one jam cleat means for receiving a jibing line and thereupon controlling such a jibing line relative to said fitting.

15. A spinnaker pole inboard fitting comprising at least one jam cleat means for receiving a jibing line and thereupon controlling such a jibing line relative to said fitting.

16. A spinnaker pole bell comprising port and starboard jibing line sheaves carried by said bell, port and starboard jam cleats carried by said bell in alignment with said port and starboard sheaves, respectively, for receiving respective port and starboard jibing lines and upon receiving such a jibing line in one of said jam cleats for holding that jibing line relative to said bell, and comprising a generally funnel like cavity for receiving a mating inboard end of a spinnaker pole.

17. A spinnaker pole bell and at least one jam cleat means carried on said bell for receiving a jibing line and thereupon controlling such a jibing line relative to said bell.

18. In combination with a generally standard spinnaker pole bell, a spinnaker pole inboard pole end fitting constructed and arranged to fit into said bell for being connected thereto, and a jibing line jam cleat carried by said fitting.

19. A differentially positionable spinnaker pole comprising inboard and outboard ends, in combination with port and starboard jibing lines and at least one cleat means mounted on said pole, near the inboard end thereof, said cleat means being constructed and arranged for receiving one of said jibing lines for holding said line relative to said pole throughout differential positioning movement of said pole.

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