

5 Vessel with spud pole assembly

10 BACKGROUND

The invention relates to a vessel with a spud pole, such as a dredging vessel. The spud pole forms an anchoring point in the sea bed straight below the dredging vessel. The spud pole is guided through a spud pole holder and is connected to a hoisting system. During normal operations the spud pole is frequently lowered and retracted by means of the hoisting system. When the dredging operations are finalized, the spud pole is fully retracted and turned down towards the deck in horizontal position.

For such dredging vessel it is necessary that the spud pole can be retracted at all times, for example at unexpected weather and sea conditions. However, in practice the hoisting system may fail. In case of such failure the spud pole may buckle, whereby it needs to be replaced.

It is an object of the present invention to provide additional provisions for a dredging vessel with a spud pole to retract or hoist its spud pole.

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SUMMARY OF THE INVENTION

According to a first aspect, the invention provides a vessel comprising a hull and a spud pole assembly, wherein the spud pole assembly comprises a base frame, a spud pole holder that is pivotably connected to the base frame, an elongate spud pole that is guided by the spud

pole holder to be hoisted and lowered in its elongate direction with respect to the hull, a first hydraulic cylinder that is at its first side pivotably connected to the base frame and at its operative opposite second side
5 pivotably connected to the spud pole holder to pivot the spud pole holder and the spud pole with respect to the base frame, and a clamping assembly to clamp the spud pole, which clamping assembly is operatively connected to the first side of the first hydraulic cylinder, wherein the spud pole
10 assembly is able to switch between a turn over mode and a hoisting mode, wherein in the turn over mode the position of the pivot between the first side of the hydraulic cylinder and the spud pole holder is fixed with respect to the spud pole holder whereby the extension or retraction of first
15 hydraulic cylinder pivots the spud pole holder and the spud pole with respect to the base frame, and wherein in the hoisting mode the pivot between the first side of the hydraulic cylinder and the spud pole holder is displaceable with respect to the spud pole holder whereby the extension
20 or retraction of the first hydraulic cylinder lowers or hoists the operatively connected clamping assembly with respect to the base frame.

The dredging vessel according to the invention comprises a spud pole holder that is in the turn over mode
25 pivotable by the first hydraulic cylinder. This first hydraulic cylinder is present to be able to turn down the spud pole after its full retraction. In the hoisting mode, the first hydraulic cylinder is used to lower and hoist the clamping assembly, and thereby the spud pole. In this way
30 the same first hydraulic cylinder efficiently forms a mayor part of a backup facility to retract the spud pole when primary hoisting provisions fail.

In an embodiment the clamping assembly is operatively connected to the first side of the first
35 hydraulic cylinder by a first hoisting cable that is guided along a hoisting sheave on the spud pole holder, wherein the hoisting sheave is located above the clamping assembly and

the first side of the first hydraulic cylinder. The hoisting cable forms a direct connection between the hydraulic cylinder and the clamping assembly. The first hoisting cable may hang loosely when it is not used.

5 In an embodiment the spud pole assembly comprises a first rail that is connected to the spud pole holder, a slider that slidable along the first rail, and a first releasable lock between the slider and the first rail to lock the sliding movement of the slider along the first
10 rail, wherein the first side of the first hydraulic cylinder is pivotably connected to the slider and the clamping assembly is operatively connected to the slider, wherein in the turn over mode the first lock is locked and in the hoisting mode the first lock is released. The slider is
15 guided by the rails whereby the displacement of the pivot with respect to the spud pole holder is well controlled and limited to a sliding movement only after release of the first lock.

In an embodiment the spud pole holder comprises a
20 tilting frame with a first passage for the spud pole that is pivotably connected to the base frame, wherein the spud pole assembly comprises a second releasable lock between the tilting frame and the spud pole to lock the movement of the spud pole in its elongate direction with respect to the
25 tilting frame. The second releasable lock enables temporary fixation of the spud pole, whereby it can be hoisted stepwise by reciprocal strokes of the clamping assembly, powered by the first hydraulic cylinder.

In an embodiment the spud pole holder comprises a
30 tilting frame with a first passage for the spud pole that is pivotably connected to the base frame, wherein the spud pole assembly comprises a third releasable lock between the tilting frame and the base frame to lock the pivoting movement of the tilting frame with respect to the base
35 frame. The third lock may be unlocked when the fully retracted spud pole is finally turned down in the turn over mode.

In an embodiment the spud pole holder comprises a tilting frame with a first passage for the spud pole that is pivotably connected to the base frame, and a yoke that is pivotably connected to the tilting frame or to the base frame, wherein the yoke comprises an engagement end for engagement of the spud pole spaced apart from the tilting frame, wherein the first side of the first hydraulic cylinder is pivotably connected to the yoke. The yoke may be turned down away from the spud pole during regular dredging operations to allow the spud pole to make some sideways movements with respect to the hull.

In an embodiment the hoisting sheave is mounted to the yoke.

In an embodiment the clamping assembly is reciprocally movable by the first hydraulic cylinder between the tilting frame and the engagement end of the yoke.

In an embodiment the clamping assembly comprises a passage for the spud pole, which passage is bounded by a first clamping face and a second clamping face that are opposite to each other transverse to the longitudinal direction of the spud pole, wherein the clamping assembly is movable between a first position and a second position with respect to the spud pole, wherein in the first position the first clamping face and the second clamping face together keep a clearance with respect to the spud pole and wherein in the second position the first clamping face and the second clamping face together tightly engage the spud pole. The first clamping face and the second clamping face enter into a force closed engagement of the spud pole. In this manner the spud pole itself does not need to be provided with additional features to be employed in the hoisting mode.

In an embodiment thereof the first clamping face is in the second position raised with respect to the second clamping face in the longitudinal direction of the spud pole.

In an embodiment thereof the first side of the

first hydraulic cylinder is operatively connected to the first clamping face to raise it with respect to the second clamping face.

In an embodiment the clamping assembly comprises a master clamp with the first clamping face, a slave clamp with the second clamping face and pairs of parallel tensioning rods that are pivotably connected to the master clamp and the slave clamp to form a parallelogram mechanism therewith. The parallelogram mechanism ensures that the master clamp can only translate with respect to the slave clamp within a limited swinging movement to position both clamping faces straight against the circumferential wall of the spud pole.

In an embodiment the spud pole holder with the spud pole is in the turn over mode pivotable by the first hydraulic cylinder between a vertical position in which the spud pole extends substantially vertical and horizontal position in which the spud pole extends substantially horizontal.

In an embodiment the center line of the first hydraulic cylinder extends in the hoisting mode under an angle of less than 20 degrees with respect to the center line of the spud pole.

In an embodiment the clamping assembly is in the hoisting mode hoisted by retraction of the first hydraulic cylinder.

In an embodiment the spud pole is connected to or suspended from a second hoisting cable that is connected to a hoisting winch. These hoisting facilities can be used for the regular frequent lowering and retraction of the spud pole.

In an embodiment the hull comprises an elongate well, wherein the base frame is movable along second rails that extend horizontally along the well, wherein the vessel comprises a second hydraulic cylinder between the hull and the base frame to move the base frame along the second rails.

In an embodiment the vessel is a dredging vessel.

According to a second aspect, the invention provides a method for hoisting an elongate spud pole of a vessel, wherein the dredging vessel comprises a hull and a
5 spud pole assembly, wherein the spud pole assembly comprises a base frame, a spud pole holder that is pivotably connected to the base frame, wherein the spud pole is guided by the spud pole holder to be hoisted and lowered in its elongate direction with respect to the hull, a first hydraulic
10 cylinder that is at its first side pivotably connected to the base frame and at its operative opposite second side pivotably connected to the spud pole holder to pivot the spud pole holder and the spud pole with respect to the base frame, and a clamping assembly to clamp the spud pole, which
15 clamping assembly is operatively connected to the first side of the first hydraulic cylinder, wherein the spud pole assembly is able to switch between a turn over mode and a hoisting mode, wherein in the turn over mode the position of the pivot between the first side of the hydraulic cylinder
20 and the spud pole holder is fixed with respect to the spud pole holder whereby the extension or retraction of first hydraulic cylinder pivots the spud pole holder and the spud pole with respect to the base frame, and wherein in the hoisting mode the pivot between the first side of the
25 hydraulic cylinder and the spud pole holder is displaceable with respect to the spud pole holder whereby the extension or retraction of the first hydraulic cylinder lowers or hoists the operatively connected clamping assembly with respect to the base frame, wherein the method comprises
30 switching to the hoisting mode when the spud pole is turned upright, and hoisting the clamping assembly by means of the first hydraulic cylinder after engagement of the spud pole.

In an embodiment thereof the clamping assembly comprises a passage for the spud pole, which passage is
35 bounded by a first clamping face and a second clamping face that are located opposite to each other transverse to the longitudinal direction of the spud pole, wherein the first

hydraulic cylinder is operatively connected to the first clamping face, wherein the method comprises hoisting the first clamping face with respect to the second clamping face in the longitudinal direction of the spud pole whereby the first clamping face and the second clamping face together tightly engage the spud pole to enter in a force close engagement with it.

The various aspects and features described and shown in the specification can be applied, individually, wherever possible. These individual aspects, in particular the aspects and features described in the attached dependent claims, can be made subject of divisional patent applications.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be elucidated on the basis of an exemplary embodiment shown in the attached drawings, in which:

Figures 1A and 1B are an isometric view and a partial longitudinal section of a suction cutter dredger with a spud carriage assembly according to an embodiment of the invention, during emergency hoisting;

Figures 2A, 2B and 2C are side views of the spud carriage assembly of figures 1A and 1B during turning down of the spud pole thereof.

DETAILED DESCRIPTION OF THE INVENTION

Figures 1A shows the spud pole side of a vessel 1, such as a cutter suction dredger or backhoe dredger. The vessel 1 comprises a elongate hull 2 with a spud carriage well 5 that debouches in the back side 3 of the hull 2. For example in case of a cutter suction dredger, the vessel 1 is at the opposite side of the hull 2 provided with a rotating

cutter head on a ladder that is not shown. The spud carriage well 5 comprises two parallel side walls 4 and two parallel horizontal rails 7 suspended along them for sliding support of a spud carriage assembly 20 according to an embodiment of the invention. The spud carriage assembly 20 and the horizontal rails 7 are also shown in isolation in figure 1B.

The spud carriage assembly 20 comprises a steel base frame 21 having a front wall 22 and two parallel side walls 23 generally forming a hollow U-profile that is open at the back side of the hull 2. The base frame 21 comprises two supports 25 that project from the side walls 23. The supports 25 are at the bottom side mounted to a hinge 26 to which slide shoes 30 are connected. The slide shoes 30 engage the rails 7 to allow a reciprocal sliding movement of the base frame 21 in horizontal direction A.

In the shown embodiment, the base frame 21 comprises on each side an upper sheave holder 40 each holding two sheaves 41 next to each other above the slide shoes 30 and two resilient lower sheave holders 42 each holding a sheave 43 below the slide shoes 30. The hull 2 is provided with schematically indicated sheaves 44, 47 above the spud carriage well 5 and schematically indicated sheaves 45, 46, 48, 49 inside the spud carriage well 5. The base frame 21 is kept upright while slid in the horizontal direction A by means of two steel cross wires 50, 51 on each side of the base frame 21. For the clarity of figure 1A only the sheaves 44-49 and the pair of cross wires 50, 51 are shown that are located at the port side of the spud carriage assembly 20. At the starboard side the same sheaves 44-49 and cross wires 50, 51 are provided. For illustrative purpose the first cross wire 50 is indicated with a thinner line than the second cross wire 51.

The first cross wire 50 is connected to the hull 2 at the front of the spud carriage well 5 and runs over one of the upper sheaves 41 of the base frame 21 back to the upper sheave 44 that is above and at front of the spud carriage well 5. The first cross wire 50 subsequently runs

freely through the upper sheave holder 40 and over the sheaves 48, 49 that are at the back, above respectively below the spud carriage well 5. Subsequently the first cross wire 50 runs over the lower sheave 42 at the back, and is finally connected to the hull 2.

The second cross wire 51 at this same port side runs symmetrically with respect to the first cross wire 50. That is, the second cross wire 51 is connected to the hull 2 at the back of the spud carriage well 5 and runs over the other upper sheave 41 of the base frame 21 back to the upper sheave 47 that is above and at the back of the spud carriage well 5. The second cross wire 51 subsequently runs freely through the upper sheave holder 40 and over the sheaves 45, 46 that are at the front, above respectively below the spud carriage well 5. Subsequently the second cross wire 51 runs over the other lower sheave 43 at the front, and is finally connected to the hull 2.

The cross wires 50, 51 are biased by horizontal displacement of one of the sheaves 44, 47 above the spud carriage well 5 by means of hydraulic cylinders that are not shown. The horizontal displacement of the base frame 21 in direction A is powered by a hydraulic cylinder between the hull 2 and the base frame 21 that is not shown either. The cross wires 50, 51 keep the base frame 21 upright while it is horizontally displaced in direction A by the hydraulic cylinder that is not shown. The base frame 21 can be kept upright by any suitable suspension system of any kind of vessel, wherein the horizontal displacement may be optional.

The spud carriage assembly 20 comprises an elongate, steel spud pole 60 and a steel spud pole holder 61 for the spud pole 60. The spud pole 60 comprises a tube 65 that may be formed of a series of tube sections, and a pointed end 66. The spud pole holder 61 comprises a tilting frame 62 with a passage 63 for the spud pole 60 and a wedge or any other releasable lock that is not shown to lock the sliding movement of the spud pole 60 through the spud pole holder 61. At the front side the tilting frame 62 is

connected to two first supports 64 of the base frame 21 by means of rotary bearings to pivot with respect to the base frame 21 in direction C around a first horizontal pivot axis B. At the free back side the tilting frame 62 is connected
5 to the base frame 21 by means of pins or any other releasable lock.

The spud pole holder 61 is furthermore provided with a steel yoke 70 having a reverse Y-frame 71 that is at its bottom side connected to the tilting frame 62 by means
10 of rotary bearings to pivot with respect to the tilting frame 62 in direction E around a second horizontal pivot axis D. In this embodiment the first horizontal pivot axis B and the second horizontal pivot axis D are located close above each other because of the size of the bearings, but
15 these pivot axis B, D may also coincide.

The yoke 70 comprises a spud pole claw 72 at the upper side of the Y-frame 71. The claw 72 tightly engages about half of the circumference of the spud pole 60. A steel closure 73 is pivotably connected to the claw 72. In the
20 open position of the closure 73 the spud pole can enter the claw 72, while in the closed position the entire circumference of the spud pole 60 is slidably enclosed.

The yoke 70 comprises multiple rails 75 that extend over the elongate back of the Y-frame 71, and a
25 slider 76 that engages and slides along the rails 71. The slider 76 is pivotably connected to two parallel hydraulic cylinders 78 that at their bottom side are pivotably connected to two second supports 77 of the base frame 21 that are positioned below and spaced apart from the first
30 supports 64. The slider 76 is movable along the rails 75 in direction F, wherein at the upper side the sliding movement can be locked and unlocked at the height of the claw 72 by means of pins or any other lock that is not shown in the drawings.

35 The yoke 70 comprises two hoisting sheaves 81 on top of the claw 72 and two parallel first hoisting cables 80 running over the sheaves 81. At one end the first hoisting

cables 80 are connected to the slider 76 and at the opposite side a clamping assembly 90 is suspended from the first cables 80. The clamping assembly 90 comprises a master clamp 91 and a slave clamp 92 both with semicircular engagement
5 faces 93 that correspond to the circumference of the spud pole 60, and two pairs of parallel tensioning rods 94 that are on both ends pivotably connected to the facing ends of the clamps 91, 92. The tensioning rods 94 form a parallelogram mechanism that imposes a mutual swinging
10 translating movement to the clamps 91, 92, wherein in the outermost mutual distance perpendicular to the spud pole 60 one of the clamps 91, 92 disengages from the spud pole 60. Only the master clamp 91 is connected to the first hoisting cables 80.

15 The spud pole assembly 20 comprises a second hoisting cable 82 that runs over a sheave 83 inside the base frame 21. At one end the second hoisting cable 82 is close to the pointed end 66 connected to the spud pole 60, and at the other side the second hoisting cable 82 is connected to
20 a winch on the hull 2 that is not shown. By hauling in or paying out this winch the elongate spud pole 60 is retracted or lowered in vertical direction G.

In order to perform dredging operations the spud pole 60 is lowered with the pointed end 66 in direction G to
25 stand on or to penetrate the sea bed. The yoke 70 is turned down in direction E by retraction of the hydraulic cylinders 78. This is shown in figure 2A. The first hoisting cables 80 are long enough to hang loosely while connected to the slider 76 and the master clamp 91. The clamping assembly 90
30 is fixated onto the flat upper surface of the spud pole holder 61 whereby the clamps 91, 92 do not engage the spud pole 60. During the dredging operations the cutter suction dredger 1 reciprocally swings sideways around the point of contact of the spud pole 60 with the sea bed to move the
35 cutter head along curved paths. After each swing the spud carriage assembly 20 is stepwise translated in direction A to move the hull 2 forward or backward with respect to the

sea bed. After each full stroke the spud pole 60 is hoisted some meters in direction G to be lowered again after the return movement in direction A. The frequent lowering and hoisting of the spud pole 60 is performed by using the
5 second hoisting cable 82.

After finishing the dredging operations the spud pole 60 may be turned down towards the hull 2. As shown in figure 2B, the spud pole 60 is then first fully hoisted up by means of the second hoisting cable 82. In this raised
10 position the pointed end 66 of the spud pole is retracted into the base frame 21. Subsequently the yoke 70 is turned upright upwards in direction E by extension of the hydraulic cylinders 78, whereby the claw 72 engages the spud pole 60. The spud pole holder 61 with the spud pole 60 are turned
15 down by retraction of the hydraulic cylinders 78. Subsequently the claw 72 is closed with the closure 73 and the tilting frame 62 is unlocked to allow the yoke 70 and the tilting frame 62 to tilt around the horizontal axis B as one unity together with the spud pole 60. This procedure is
20 executed in reverse order to turn the spud pole 60 upright again.

In case of failure of the second hoisting cable 82 or the related critical components, the spud carriage assembly 20 has been provided with a backup facility to
25 hoist the spud pole 60. The backup facility is formed by the hydraulic cylinders 78 and the slider 76 that are also used to turn over the spud pole 60, and by the clamping assembly 90 and the first hoisting cables 80 that run over the sheaves 81. When this backup facility is employed, the spud
30 pole assembly 20 is switched from the regular turn over mode to the emergency hoisting mode. In preparation thereof the hydraulic cylinders 78 are extended to erect the yoke 70 and to close its closure 73. During erecting the yoke 70, the clamping assembly 90 remains positioned onto the spud pole
35 holder 61. The pivoting movement of the tilting frame 62 in direction E remains locked. In this position the spud pole assembly 20 is switched over to the emergency hoisting mode

by release of the sliding movement of the slider 76 along the rails 71. Subsequently the hydraulic cylinders 78 are fully retracted, causing the clamping assembly 90 to move upwards. In this upward stroke the master clamp 91 is initially hoisted with respect to the slave clamp 92 to engage the spud pole 60, followed by the longer trajectory in which the spud pole 60 is actually hoisted. The clamping assembly 90 enters into a force closed engagement of the spud pole 60. This engagement tightens proportionally with the imposed hoisting force, whereby slipping along the spud pole 60 is prevented. At the end of this upward stroke the hoisted spud pole 60 is temporary fixated by the spud pole holder 61, where after the hydraulic cylinders 78 are extended. In this downward stroke the force closed engagement by the clamping assembly 90 is automatically released and the clamping assembly 90 slides down along the spud pole 60 under its own weight.

By repeating the abovementioned steps the spud pole 60 is stepwise hoisted, wherein the hoisting distance is each time slightly smaller than the stroke length of the hydraulic cylinders 78. When the spud pole 60 finally also needs to be turned down, the spud pole assembly 20 is switched back again to the turn over mode by locking the slider 76 again at the top after the final extension of the hydraulic cylinders 78. After release of the tilting movement in direction D, the spud pole holder 61 with the spud pole 60 can be turned down as described here before. The backup facility allows the cutter suction dredger 1, or any other vessel with such spud pole assembly 20, to retract its spud pole 60 at any moment. This is necessary when the main facility is temporary down while the spud pole 60 needs to be retracted, for example due to unpredicted weather and sea conditions.

It is to be understood that the above description is included to illustrate the operation of the preferred embodiments and is not meant to limit the scope of the invention. From the above discussion, many variations will

be apparent to one skilled in the art that would yet be encompassed by the spirit and scope of the present invention.

C L A I M S

1. Vessel (1) comprising a hull (2) and a spud pole assembly (20), wherein the spud pole assembly comprises a base frame (21), a spud pole holder (61) that is pivotably connected to the base frame, an elongate spud pole (60) that is guided by the spud pole holder to be hoisted and lowered in its elongate direction with respect to the hull, a first hydraulic cylinder (78) that is at its first side pivotably connected to the base frame (21) and at its operative opposite second side pivotably connected to the spud pole holder (61) to pivot the spud pole holder and the spud pole with respect to the base frame, and a clamping assembly (90) to clamp the spud pole, wherein the spud pole assembly (20) is able to switch between a turn over mode and a hoisting mode, wherein in the turn over mode the position of the pivot between the first side of the hydraulic cylinder (78) and the spud pole holder (61) is fixed with respect to the spud pole holder whereby the extension or retraction of first hydraulic cylinder (78) pivots the spud pole holder (61) and the spud pole (60) with respect to the base frame (21), wherein the clamping assembly is operatively connected to the first side of the first hydraulic cylinder (78), wherein in the hoisting mode the pivot between the first side of the hydraulic cylinder (78) and the spud pole holder (61) is displaceable with respect to the spud pole holder (61) whereby the extension or retraction of the first hydraulic cylinder (78) lowers or hoists the operatively connected clamping assembly (90) with respect to the base frame (21).

2. Vessel (1) according to claim 1, wherein the clamping assembly (20) is operatively connected to the first side of the first hydraulic cylinder (78) by a first hoisting cable (80) that is guided along a hoisting sheave (81) on the spud pole holder (61), wherein the hoisting

sheave is located above the clamping assembly (20) and the first side of the first hydraulic cylinder (78).

3. Vessel (1) according to any one of the preceding claims, wherein the spud pole assembly (20) comprises a first rail (75) that is connected to the spud pole holder (61), a slider (76) that is slidable along the first rail, and a first releasable lock between the slider (78) and the first rail (75) to lock the sliding movement (F) of the slider (76) along the first rail (75), wherein the first side of the first hydraulic cylinder (78) is pivotably connected to the slider (76) and the clamping assembly (20) is operatively connected to the slider, wherein in the turn over mode the first lock is locked and in the hoisting mode the first lock is released.

4. Vessel (1) according to any one of the preceding claims, wherein the spud pole holder (61) comprises a tilting frame (62) with a first passage (63) for the spud pole (60) that is pivotably connected to the base frame (21), wherein the spud pole assembly (20) comprises a second releasable lock between the tilting frame (62) and the spud pole (60) to lock the movement of the spud pole in its elongate direction with respect to the tilting frame, and/or wherein the spud pole holder (61) comprises a tilting frame (62) with a first passage (63) for the spud pole (60) that is pivotably connected to the base frame (21), wherein the spud pole assembly (20) comprises a third releasable lock between the tilting frame (62) and the base frame (21) to lock the pivoting movement of the tilting frame with respect to the base frame, and/or wherein the spud pole holder (61) comprises a tilting frame (62) with a first passage (63) for the spud pole (60) that is pivotably connected to the base frame (21), and a yoke (70) that is pivotably connected to the tilting frame (62) or to the base frame (62), wherein the yoke (70) comprises an engagement end (72) for engagement of the spud pole (60) spaced apart from the tilting frame (62), wherein the first side of the first hydraulic cylinder (78) is pivotably

connected to the yoke, wherein preferably the clamping assembly (90) is reciprocally movable by the first hydraulic cylinder (78) between the tilting frame (62) and the engagement end (72) of the yoke (70).

5 5. Vessel (1) according to claims 2 and 4, wherein the hoisting sheave (81) is mounted to the yoke (70), wherein preferably the clamping assembly (90) is reciprocally movable by the first hydraulic cylinder (78) between the tilting frame (62) and the engagement end (72)
10 of the yoke (70).

 6. Vessel (1) according to any one of the preceding claims, wherein the clamping assembly (90) comprises a passage for the spud pole (60), which passage is bounded by a first clamping face (91, 93) and a second
15 clamping face (92, 93) that are opposite to each other transverse to the longitudinal direction of the spud pole (60), wherein the clamping assembly (90) is movable between a first position and a second position with respect to the spud pole (60), wherein in the first position the first
20 clamping face (91, 93) and the second clamping face (92, 93) together keep a clearance with respect to the spud pole (60) and wherein in the second position the first clamping face (91, 93) and the second clamping face (92, 93) together tightly engage the spud pole (60), wherein
25 preferably in the second position the first clamping face (91, 93) is raised with respect to the second clamping face (92, 93) in the longitudinal direction of the spud pole (60).

 7. Vessel (1) according to claim 6, wherein the
30 clamping assembly (90) comprises a master clamp (91) with the first clamping face (91, 93), a slave clamp (92) with the second clamping face (92, 93) and pairs of parallel tensioning rods (94) that are pivotably connected to the master clamp (92) and the slave clamp (93) to form a
35 parallelogram mechanism therewith.

 8. Vessel (1) according to any one of the preceding claims, wherein in the turn over mode the spud

pole holder (61) with the spud pole (60) is pivotable by the first hydraulic cylinder (78) between a vertical position in which the spud pole (60) extends substantially vertical and horizontal position in which the spud pole
5 (60) extends substantially horizontal.

9. Vessel (1) according to any one of the preceding claims, wherein in the hoisting mode the center line of the first hydraulic cylinder (78) extends under an angle of less than 20 degrees with respect to the center
10 line of the spud pole (60).

10. Vessel (1) according to any one of the preceding claims, wherein in the hoisting mode the clamping assembly (90) is hoisted by retraction of the first hydraulic cylinder (78).

15 11. Vessel (1) according to any one of the preceding claims, wherein the spud pole (60) is connected to or suspended from a second hoisting cable (82) that is connected to a hoisting winch.

12. Vessel (1) according to any one of the preceding claims, wherein the hull (2) comprises an elongate well (5), wherein the base frame (21) is movable along second rails (7) that extend horizontally along the well, wherein the vessel comprises a second hydraulic cylinder between the hull (2) and the base frame (21) to
20 move the base frame along the second rails (7).
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13. Vessel (1) according to any one of the preceding claims, wherein the vessel (1) is a dredging vessel.

14. Method for hoisting an elongate spud pole
30 (60) of a vessel (1), wherein the vessel comprises a hull (2) and a spud pole assembly (20), wherein the spud pole assembly comprises a base frame, a spud pole holder (61) that is pivotably connected to the base frame, wherein the spud pole (60) is guided by the spud pole holder to be
35 hoisted and lowered in its elongate direction with respect to the hull, a first hydraulic cylinder (78) that is at its first side pivotably connected to the base frame (21) and

at its operative opposite second side pivotably connected to the spud pole holder (61) to pivot the spud pole holder and the spud pole with respect to the base frame, and a clamping assembly (90) to clamp the spud pole, wherein the
5 spud pole assembly (20) is able to switch between a turn over mode and a hoisting mode, wherein in the turn over mode the position of the pivot between the first side of the hydraulic cylinder (78) and the spud pole holder (61) is fixed with respect to the spud pole holder whereby the
10 extension or retraction of first hydraulic cylinder (78) pivots the spud pole holder (61) and the spud pole (60) with respect to the base frame (21), wherein the clamping assembly is operatively connected to the first side of the first hydraulic cylinder (78), wherein in the hoisting mode
15 the pivot between the first side of the hydraulic cylinder (78) and the spud pole holder (61) is displaceable with respect to the spud pole holder (61) whereby the extension or retraction of the first hydraulic cylinder (78) lowers or hoists the operatively connected clamping assembly (20)
20 with respect to the base frame (21), wherein the method comprises switching to the hoisting mode when the spud pole (60) is turned upright, and hoisting the clamping assembly (90) by means of the first hydraulic cylinder (78) after engagement of the spud pole (60).

25 15. Method according to claim 14, wherein the clamping assembly (90) comprises a passage for the spud pole (60), which passage is bounded by a first clamping face (91, 93) and a second clamping face (92, 93) that are located opposite to each other transverse to the
30 longitudinal direction of the spud pole (60), wherein the first hydraulic cylinder (78) is operatively connected to the first clamping face (91, 93), wherein the method comprises hoisting the first clamping face (91, 93) with respect to the second clamping face (92, 93) in the
35 longitudinal direction of the spud pole (60) whereby the first clamping face (91, 93) and the second clamping face (92, 93) together tightly engage the spud pole (60) to

enter in a force close engagement with it.