

PRESSURIZATION STRUCTURE FOR DRILLING RIG AND DRILLING RIG

TECHNICAL FIELD

[0001] The disclosure relates to the technical field of engineering machinery, in particular to a pressurization structure for drilling rig and a drilling rig.

BACKGROUND

[0002] A drilling rig is widely used for drilling in the field of exploration, railway, highway, bridge, water conservancy and hydropower, tunnel, water well, anchor rod, small diameter diamond core coring drilling, industrial and civil construction, engineering geological exploration, ground source thermal drilling, coal-bed gas drilling, and anti-outburst drilling machine.

[0003] There are two common types of pressurization structures of the drilling rig in prior art, one is steel-rope pressurization, and the other is cylinder pressurization. An ordinary steel-rope pressurization is realized by winch pressurization, which requires a separate pressurizing winch, causing high cost and great limitations. Moreover, the steel-rope pressurization requires stretching a cylinder and a movable pulley tight, which requires high cost. At the same time, as passing through the inside of a mast, the steel rope is easy to wear with the structure inside the mast, which would reduce service life of the steel rope.

SUMMARY

[0004] The disclosure provides a pressurization structure for a drilling rig and a drilling rig, to avoid defects of high cost and great limitation caused by pressurization structures used in prior art.

[0005] The disclosure provides a drilling rig, including a mast, a power head slidably connected to the mast, and a pressurization structure for driving the power head;

[0006] the pressurization structure includes a first pulley, a second pulley, a main winch, an auxiliary winch, a main-winch steel rope and an auxiliary-winch steel rope; wherein,

[0007] the first pulley is disposed at the top of the mast, the main winch includes a

main-winch drum positioned at a side of the mast, and the main-winch steel rope is connected to the power head after passing around the first pulley in a direction away from the main-winch drum;

[0008] the second pulley is disposed at the bottom of the mast, the auxiliary winch
5 includes an auxiliary-winch drum positioned at a side of the mast, and the auxiliary-winch steel rope is connected to the power head after passing around the second pulley in a direction away from the auxiliary-winch drum.

[0009] According to a drilling rig provided by the disclosure, the pressurization structure further includes a third pulley. In the direction away from the auxiliary-winch
10 drum, the auxiliary-winch steel rope passes around the third pulley and then is wound around the second pulley; wherein the third pulley is disposed on the mast at a height between the first pulley and the second pulley.

[0010] According to a drilling rig provided by the disclosure, the mast includes a main mast and an upper mast mounted above the main mast, and the first pulley and the third
15 pulley are mounted on the upper mast.

[0011] According to a drilling rig provided by the disclosure, the mast includes a main mast and an upper mast mounted above the main mast, and the first pulley is mounted on the upper mast.

[0012] According to a drilling rig provided by the disclosure, the mast further includes
20 an elongated lower mast, the elongated lower mast is disposed at the bottom of the main mast, and the second pulley is disposed on the elongated lower mast.

[0013] According to a drilling rig provided by the disclosure, the main winch and the auxiliary winch are respectively provided with a floating valve for controlling hydraulic pressure, so as to enable the main-winch drum to unwind synchronously when the
25 auxiliary-winch drum winds up, and enable the auxiliary-winch drum to unwind synchronously when the main-winch drum winds up.

[0014] According to a drilling rig provided by the disclosure, the drilling rig further includes a drilling rod connected to the power head, wherein the drilling rod is any one of an anchor rod, a pre-stressed anchor cable or a rotary nozzle.

[0015] According to a drilling rig provided by the disclosure, the drilling rig further
30 includes a drilling rig body, the mast is mounted on the drilling rig body, and the drilling rig body adopts a crawler-type traveling chassis.

[0016] According to a drilling rig provided by the disclosure, the drilling rig further

includes a pressurization cylinder; a fixed end of the pressurization cylinder is connected to the mast, and a telescopic end the pressurization oil cylinder is connected to the power head, and the power head is configured to be able to slide along a length direction of the mast under a driving of the pressurization cylinder.

5 [0017] The disclosure also provides a pressurization structure for a drilling rig, wherein the drilling rig includes a mast and a power head slidably mounted on the mast. The pressurization structure includes a main winch, an auxiliary winch, a main-winch steel rope, an auxiliary-winch steel rope, a first pulley mounted on the top of the mast and a second pulley mounted on the mast and below the power head;

10 [0018] wherein the main winch includes a main-winch drum disposed at a side of the mast, the main-winch steel rope is arranged to be wound around the main-winch drum and pass around the first pulley in a direction away from the main-winch drum and then be connected to the power head; the auxiliary winch includes an auxiliary-winch drum disposed at a side of the mast, and the auxiliary-winch steel rope is arranged to be wound
15 around the auxiliary-winch drum and pass around the second pulley in a direction away from the auxiliary-winch drum and then be connected to the power head.

[0019] According to a pressurization structure provided by the disclosure, the pressurization structure further includes a third pulley mounted on the mast above the second pulley. In the direction away from the auxiliary-winch drum, the auxiliary-winch
20 steel rope passes around the third pulley and then is wound around the second pulley.

[0020] According to a pressurization structure provided by the disclosure, the third pulley is arranged to be mounted at a height lower than the first pulley.

[0021] According to a pressurization structure provided by the disclosure, the main winch and the auxiliary winch respectively include a floating valve for controlling
25 hydraulic pressure, so as to enable the main-winch drum to unwind synchronously when the auxiliary-winch drum winds up, and enable the auxiliary-winch drum to unwind synchronously when the main-winch drum winds up.

[0022] The pressurization structure disposed on the drilling rig provided by the disclosure has simple structure and low cost. Moreover, the pressurization structure
30 provided by the disclosure has few restrictions and can raise the power head to a higher position of the mast, so that the drilling rig is widely used and suitable for construction of various construction methods like CFA, anchor rod, pre-stressed anchor cable, high-pressure rotary spray and other construction methods. In addition, the main-winch

steel rope and the auxiliary-winch steel rope in the pressurized structure do not pass through the inside of the mast, so the problem of low service life of the steel rope caused by wear of the steel rope and the internal structure of the mast can be avoided.

BRIEF DESCRIPTION OF DRAWINGS

5 [0023] In order to more clearly explain the technical solutions of the disclosure or the prior art, the embodiments or the drawings needed in the description of the prior art will be briefly introduced in the following part. It is obvious that the drawings described below are some embodiments of the disclosure. For those skilled in the art, other drawings can be obtained based on these drawings without paying creative labor.

10 [0024] FIG. 1 is a schematic structural diagram of a pressurization structure for a drilling rig according to an embodiment of the disclosure;

[0025] FIG. 2 is a schematic structural diagram of a drilling rig according to an embodiment of the disclosure;

15 [0026] FIG. 3 is a schematic structural diagram of a drilling rig with a pressurization cylinder according to an embodiment of the disclosure;

[0027] Reference mark:

[0028] 1: mast; 2: power head; 3: upper mast; 4: first pulley; 5: main-winch drum; 6: main-winch steel rope; 7: second pulley; 8: auxiliary-winch drum; 9: auxiliary-winch steel rope; 10: third pulley; 11: elongated lower mast; 12: drilling rod; 13: drilling rig
20 body; 14: pressurization cylinder

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0029] In order to make the purpose, technical solution and advantages of the disclosure more clear, the technical solution of the disclosure will be described clearly and completely below in combination with the drawings in the disclosure. Obviously, the
25 described embodiments are part of the embodiments of the disclosure, not all of them. Based on the embodiments of the disclosure, all other embodiments obtained by those skilled in the art without creative labor belong to the scope of protection of the disclosure.

[0030] The disclosure provides a pressurization structure for a drilling rig, which includes a mast 1 and a power head 2 slidably mounted on the mast 1. As shown in FIG. 1
30 (referring to FIG. 2), the pressurization structure includes: a main winch, an auxiliary

winch, a main-winch steel rope 6, an auxiliary-winch steel rope 9, a first pulley 4 for being mounted on the top of the mast 1, and a second pulley 7 for being mounted on the mast 1 and below the power head 2;

[0031] wherein the main winch includes a main-winch drum 5 for being arranged at a side of the mast 1. The main-winch steel rope 6 is arranged to be wound around the main-winch drum 5 and be connected to the power head 2 after passing around the first pulley 4 in a direction away from the main-winch drum 5; the auxiliary winch includes an auxiliary-winch drum 8 for being arranged at a side of the mast 1, and the auxiliary-winch steel rope 9 is arranged to be wound around the auxiliary-winch drum 8 and be connected to the power head 2 after passing around the second pulley 7 in a direction away from the auxiliary-winch drum 8. Therein, the main-winch drum 5 and the auxiliary-winch drum 8 being disposed at a side of the mast 1 means that the main-winch drum 5 and the auxiliary-winch drum 8 are positioned on the periphery of the mast 1, not only at a left side or a right side, but also at a front side or a rear side.

[0032] The pressurization structure provided in the disclosure can exert downward pressure on the power head 2 by controlling the auxiliary-winch drum 8 to wind up the auxiliary-winch steel rope 9, and can lift the power head 2 upward by controlling the main-winch drum 5 to wind up the main-winch steel rope 6.

[0033] In an embodiment, the pressurization structure further includes a third pulley 10 for being mounted on the mast 1 and above the second pulley 7. In the direction away from the auxiliary-winch drum 8, the auxiliary-winch steel rope 9 is arranged to pass around the third pulley 10 from above and then wind around the second pulley 7 downward.

[0034] Alternatively, the third pulley 10 is disposed at a height lower than the first pulley 4. In this way, the main-winch steel rope 6 and the auxiliary-winch steel rope 9 may avoid winding with each other.

[0035] In an embodiment, the main winch and the auxiliary winch respectively include a floating valve for controlling hydraulic pressure, so that the main-winch drum 5 can be synchronously unwound when the auxiliary-winch drum 8 is wound, and the auxiliary-winch drum 8 can be synchronously unwound when the main-winch drum 5 is wound. The pressurization structure may further include a float switch to control the float valve. It is possible for those skilled in the art to control the hydraulic pressure through the floating valve in the hydraulic system so that when one drum is wound the other drum

may be synchronously unwound in a floating state, which will not be described in detail here.

[0036] It should be understood that control of the rotation of the main-winch drum 5 and the auxiliary-winch drum 8 is not limited to the hydraulic system control. In other embodiments, a motor can also be used to control the rotation of the main-winch drum 5 and the auxiliary-winch drum 8. In the process of working, the main-winch drum 5 can be synchronously unwound when the auxiliary-winch drum 8 is controlled to be unwound, and the auxiliary-winch drum 8 can be synchronously unwound when the main-winch drum 5 is controlled to be unwound.

[0037] The pressurization structure provided by the disclosure is simple in structure, convenient and flexible to be used for multi-construction-method drilling rig, which is suitable for various construction methods.

[0038] The disclosure also provides a drilling rig, as shown in FIG. 1 and FIG. 2. The drilling rig includes a mast 1, a power head 2 slidably connected to the mast 1, and a pressurization structure for driving the power head 2.

[0039] The pressurization structure includes a first pulley 4, a second pulley 7, a main winch, an auxiliary winch, a main-winch steel rope 6 and an auxiliary-winch steel rope 9.

[0040] Therein, the first pulley 4 is disposed on the top of the mast 1, the main winch includes a main-winch drum 5 at a side of the mast 1, the main-winch steel rope 6 is connected to the power head 2 after passing around the first pulley 4 in a direction away from the main-winch drum 5; the second pulley 7 is disposed on the bottom of the mast 1, and the auxiliary winch includes an auxiliary-winch drum 8 at a side of the mast 1; the auxiliary-winch steel rope 9 is connected to the power head 2 after passing around the second pulley 7 in a direction away from the auxiliary-winch drum 8.

[0041] The pressurization structure adopted by the drilling rig provided by the disclosure is simple in structure, which can effectively reduce cost compared with the winch pressurization in the prior art, and the pressurization structure has less restrictions. By adopting the pressurization structure on the drilling rig, the power head 2 can be raised to a higher position of the mast 1, so that the drilling rig is widely used and suitable for the construction of various construction methods, like CFA, anchor rod, pre-stressed anchor cable, high-pressure rotary spray and other construction methods. In addition, when the pressurization structure provided in the disclosure is used on a drilling rig, the main-winch steel rope 6 and the auxiliary-winch steel rope 9 do not pass through the

inside of the mast 1, so that the problem of low service life of the steel rope caused by wear between the steel rope and the internal structure of the mast 1 may be avoided.

[0042] The drilling rig according to an embodiment of the disclosure will be described below with reference to FIG. 1 and FIG. 2.

5 [0043] In this embodiment, the power head 2 is slidably mounted on the mast 1. The mast 1 includes: a main mast and an upper mast 3 mounted above the main mast, wherein the upper mast 3 is disposed on the top of the mast 1 for installing a pulley frame bearing a first pulley 4; the first pulley 4 is disposed on the top of the upper mast 3, the main-winch drum 5 is disposed at a side of the mast 1 and is used to provide power for
10 the main-winch steel rope 6; the main-winch steel rope 6 is wound around the main-winch drum 5, and one end of the main-winch steel rope 6 is connected to the main-winch drum 5, and the other end of the main-winch steel rope 6 is connected to the top of the power head 2 after passing around the top of the first pulley 4; the second pulley 7 is disposed on the bottom of the mast 1; the auxiliary-winch drum 8 is disposed
15 at a side of the mast 1; the auxiliary-winch steel rope 9 is wound around the auxiliary-winch drum 8, and one end of the auxiliary-winch steel rope 9 is connected to the auxiliary-winch drum 8, and the other end of the auxiliary-winch steel rope 9 passes around the bottom of the second pulley 7 and is connected to the bottom of the power head 2.

20 [0044] As shown in FIG. 1 and FIG. 2, the main-winch steel rope 6 starts from the main-winch drum 5, goes upward from the outside of the mast 1, and is connected to the lifting lug on the top of the power head 2 through the first pulley 4. The auxiliary-winch steel rope 9 starts from the auxiliary-winch drum 8, goes upward from the outside of the mast 1, passes through the mast 1 by winding by the auxiliary-winch drum 8, reaches an
25 other side of the mast 1, and then passes downward through the second pulley 7 disposed on the bottom of the mast 1 to connect to a lower part of the power head 2.

[0045] The steel rope in a steel-rope pressurization system needs to be kept under tension. A traditional steel-rope pressurization is to use a tension cylinder to tension the steel rope. The disclosure does not need to add a configuration of the tension cylinder.
30 After an overall assembly is completed, the main-winch drum 5 and the auxiliary-winch drum 8 are controlled to rotate synchronously (i.e., the auxiliary-winch drum 8 is synchronously unwound when the main-winch drum 5 is wound, and the main-winch drum 5 is synchronously unwound when the auxiliary-winch drum 8 is wound).

Specifically, the motor of one of them can be controlled to work and the motor of the other not work, and the steel-rope tightening of the steel-rope pressurization system may be completed by making the motor of the other rotate following the rotation of the motor of one of them.

5 [0046] In this embodiment, the pressurization structure may further include a third pulley 10, which is disposed on the mast 1 and at a height between the first pulley 4 and the second pulley 7. In a direction away from the auxiliary-winch drum 8, the auxiliary-winch steel rope 9 passes around the top of the third pulley 10, then passes around the bottom of the second pulley 7 and is connected to the bottom of the power
10 head 2, which can ensure the rope exit angle and rope entry angle of the auxiliary-winch drum 8, so that twisting of the auxiliary-winch steel rope 9 is prevented. It should be noted that when the space distance between the auxiliary-winch drum 8 and the second pulley 7 is long enough to ensure the rope exit angle and rope entry angle of the auxiliary-winch drum 8, it is unnecessary to add the third pulley 10, and the
15 auxiliary-winch steel rope 9 may be directly connected from the auxiliary-winch drum 8 to the second pulley 7. Of course, the main-winch drum 5 and the auxiliary-winch drum 8 may be interchanged according to the arrangement.

[0047] In this embodiment, the height of the third pulley 10 is lower than the height of the first pulley 4, which may ensure that the main-winch steel rope 6 and the
20 auxiliary-winch steel rope 9 do not interfere with each other during operation.

[0048] Alternatively, the third pulley 10 may be mounted on an upper mast 3 on the top of the mast 1, that is, the first pulley 4 and the third pulley 10 are both mounted on the upper mast 3, so that the first pulley 4 and the third pulley 10 may be removed together when the upper mast 3 is removed.

25 [0049] In order to further optimize the above technical solution, the mast 1 further includes an elongated lower mast 11, the elongated lower mast 11 is disposed at the bottom of the main mast of the mast 1, and the second pulley 7 is disposed on the elongated lower mast 11.

[0050] When it is required to configure different construction methods, the existing
30 main-winch drum 5 and auxiliary-winch drum 8 of the rotary excavation method are used to complete the steel-rope pressurization system to realize pressurization, lowering and lifting of the power head.

[0051] The cylinder pressurization system may be switched with the above-mentioned

steel-rope pressurization structure. When switching to the cylinder-pressurization system, the upper mast 3 and the elongated lower mast 11 are removed, a fixed end of the pressurization cylinder is mounted on the mast 1, and a telescopic end is connected to the power head 2. Thus, the power head 2 may be pressurized by the pressurization cylinder.

5 [0052] When switching from the cylinder-pressurization system to the pressurization structure of the disclosure, the pressurization cylinder is removed, and the upper mast 3 and the elongated lower mast 11 are mounted on the main mast of the mast 1. After the main-winch steel rope 6 and the auxiliary-winch steel rope 9 are erected, the steel-rope pressurization structure can be used for pressurizing. The switching of the two
10 pressurizing methods is simple and convenient.

[0053] In order to further optimize the above technical solution, the main-winch drum 5 and the auxiliary-winch drum 8 need to be synchronized in the steel-rope pressurization system to prevent failing in pressurization. Floating valves are set on the main winch and the auxiliary winch to control the hydraulic pressure, and floating switches are set in the
15 pressurization operation system. During pressurization and lowering, the auxiliary-winch motor operates. When the auxiliary-winch drum 8 rotates to wind up the auxiliary-winch steel rope 9, the main-winch drum 5 is in a floating state, and the rope is released synchronously with the action of the auxiliary-winch drum 8. During a lifting process, the main winch motor works, the main-winch drum 5 winds up the main-winch steel rope 6,
20 and the auxiliary-winch drum 8 is in a floating state. With the action of the main-winch drum 5, the steel rope can be prevented from being twisted.

[0054] In the technical scheme provided by the disclosure, the main-winch steel rope 6 and the auxiliary-winch steel rope 9 are routed outside the mast 1, which solves the problem that the steel rope needs to pass through the inside of the mast in the prior art,
25 which is easy to wear with the structure inside the mast and affects the service life of the steel rope.

[0055] When the construction methods such as CFA, anchor bolt, pre-stressed anchor cable and high-pressure rotary spray are required to be implemented, the power head shall be lifted to the highest point so that a full pressurization is realized.

30 [0056] Under the condition of multi construction method, there are mainly three working conditions for the drilling rig to adopt the steel-rope pressurization structure provided by the disclosure, referring to FIG. 2.

[0057] Pressurized working condition: when the drilling rod 12 contacts with the

formation, the power head 2 is connected with the drilling rod 12, the auxiliary winch motor works, the auxiliary-winch drum 8 winds up the auxiliary-winch steel rope 9, and the main-winch drum 5 is in the floating state and perform unwinding with the action of the auxiliary-winch drum 8, that is, unwinding synchronously. Under the pulling force of the auxiliary-winch steel rope 9, the power head 2 transmits the pressure to the drilling rod 12 to complete the pressurization.

[0058] Lowering condition: when the drilling rod 12 is not in contact with the formation and the power head 2 needs to be lowered, the auxiliary-winch motor works, the auxiliary-winch drum 8 winds up the auxiliary-winch steel rope 9, and the main-winch drum 5 is in a floating state and perform unwinding with the action of the auxiliary-winch drum 8. The work of the auxiliary winch and the self weight of the power head 2 resist the resistance of the floating valve of the main winch before the power head 2 is lowered. It can prevent the power head 2 from suddenly accelerating and falling, which may cause safety hazards; The power head 2 moves downward along the slide rail 1 of the mast.

[0059] Lifting condition: after the construction is completed, the power head 2 needs to be lifted. During the lifting process, the main-winch motor works, and the main-winch drum 5 winds up the main-winch steel rope 6. The auxiliary-winch drum 8 is in a floating state and perform unwinding with the action of the main-winch drum 5. The power head 2 moves upward along the slide rail of the mast 1.

[0060] Another embodiment of the disclosure also discloses a drilling rig, which includes a drilling rig body 13, a mast 1, a drilling rod 12, a power head 2 and the above-mentioned pressurizing structure. The mast 1 is disposed on the drilling rig body 13, and the pressurization structure is disposed on the mast 1 to provide pressurization for the power head 2. The drilling rod 12 is connected to the power head 2.

[0061] The drilling rig provided in this embodiment uses the existing main winch and auxiliary winch of the drilling rig to realize the lifting, lowering and pressurization of the power head 2 by adding a second pulley 7, a third pulley 10 and a first pulley 4.

[0062] Therein the drilling rod 12 is an anchor rod, a pre-stressed anchor cable or a rotary nozzle, which may be selected according to actual working conditions. The drilling rig body 13 adopts a crawler type traveling chassis.

[0063] Another embodiment of the disclosure also discloses a drilling rig, which, as shown in FIG. 3, includes a drilling rig body 13, a mast 1 and a power head 2, and also includes the above-mentioned pressurization structure and a pressurization cylinder 14.

That is, the above-mentioned pressurization structure can be used in combination with the pressurization cylinder 14 of the hydraulic system, or can be used alone, which may be switched according to different working conditions. When the pressurization cylinder 13 is used to provide pressurization for the power head 2, the fixed end of the pressurization cylinder 14 is connected to the mast 1. Its telescopic end is connected to the power head 2, and the power head 2 can slide along the length direction of the mast 1 under the driving of the pressurizing cylinder 14. When switching to the pressurization structure provided in the disclosure to pressurize, the pressurizing cylinder 14 can be removed. The specific switching mode of the pressurizing cylinder 14 and the pressurization structure provided in the disclosure can be referred to the above description.

[0064] Finally, it should be noted that the above embodiments are only used to explain the technical solution of the disclosure, and not to limit it; Although the disclosure has been described in detail with reference to the foregoing embodiments, those skilled in the art should understand that the technical solutions described in the foregoing embodiments can still be modified, or some of the technical features can be equivalently replaced; These modifications or substitutions do not make the essence of the corresponding technical solutions depart from the spirit and scope of the technical solutions of the embodiments of the disclosure.

What is claimed is:

1. A drilling rig, comprising:

a mast, a power head slidably mounted on the mast, and a pressurization structure for driving the power head;

5 the pressurization structure comprising a first pulley, a second pulley, a main winch, an auxiliary winch, a main-winch steel rope and an auxiliary-winch steel rope; wherein,

the first pulley is disposed at the top of the mast, the main winch comprises a main-winch drum positioned at a side of the mast, and the main-winch steel rope is connected to the power head after passing around the first pulley in a direction away from
10 the main-winch drum;

the second pulley is disposed at the bottom of the mast, the auxiliary winch comprises an auxiliary-winch drum positioned at a side of the mast, and the auxiliary-winch steel rope is connected to the power head after passing around the second pulley in a direction away from the auxiliary-winch drum.

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2. The drilling rig according to claim 1, wherein the pressurization structure further comprises a third pulley, the auxiliary-winch steel rope passes around the third pulley and then is wound around the second pulley in the direction away from the auxiliary-winch drum; wherein the third pulley is disposed on the mast at a height between the first pulley
20 and the second pulley.

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3. The drilling rig according to claim 2, wherein the mast comprises a main mast and an upper mast mounted above the main mast, and the first pulley and the third pulley are mounted on the upper mast.

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4. The drilling rig according to claim 1, wherein the mast comprises a main mast and an upper mast mounted above the main mast, and the first pulley is mounted on the upper mast.

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5. The drilling rig according to claim 3 or 4, wherein the mast further comprises an elongated lower mast, the elongated lower mast is disposed at the bottom of the main mast, and the second pulley is disposed on the elongated lower mast.

6. The drilling rig according to any one of claims 1 to 5, wherein the main winch and the auxiliary winch are respectively provided with a floating valve for controlling hydraulic pressure, so as to enable the main-winch drum to unwind synchronously when the auxiliary-winch drum winds up, and enable the auxiliary-winch drum to unwind
5 synchronously when the main-winch drum winds up.

7. The drilling rig according to any one of claims 1 to 6, wherein the drilling rig further comprises a drilling rod connected to the power head, and the drilling rod is any one of an anchor rod, a pre-stressed anchor cable or a rotary nozzle.
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8. The drilling rig according to any one of claims 1 to 7, wherein the drilling rig further comprises a drilling rig body, the mast is mounted on the drilling rig body, and the drilling rig body adopts a crawler type traveling chassis.

9. The drilling rig according to any one of claims 1 to 8, wherein the drilling rig further comprises a pressurization cylinder; a fixed end of the pressurization cylinder is connected to the mast, a telescopic end of the pressurization cylinder is connected to the power head, and the power head is configured to be able to slide along a length direction of the mast under a driving of the pressurization cylinder.
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10. A pressurization structure for a drilling rig, comprising a mast and a power head slidably mounted on the mast, wherein the pressurization structure comprises a main winch, an auxiliary winch, a main-winch steel rope, an auxiliary-winch steel rope, a first pulley mounted on the top of the mast and a second pulley mounted on the mast and
20 below the power head;

wherein the main winch comprises a main-winch drum mounted at a side of the mast, the main-winch steel rope is arranged to be wound around the main-winch drum and pass around the first pulley in a direction away from the main-winch drum and then connected to the power head; the auxiliary winch includes an auxiliary-winch drum mounted on the
25 side of the mast, and the auxiliary-winch steel rope is arranged to be wound around the auxiliary-winch drum and pass around the second pulley in a direction away from the auxiliary-winch drum and then connected to the power head.
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11. The pressurization structure according to claim 10, wherein the pressurization structure further comprises a third pulley mounted on the mast and above the second pulley, the auxiliary-winch steel rope is arranged to pass around the third pulley in the direction away from the auxiliary-winch drum and then be wound around the second pulley; wherein the third pulley is arranged to be mounted at a height lower than the first pulley.

12. The pressurization structure according to claims 10 or 11, wherein the main winch and the auxiliary winch respectively comprise a floating valve for controlling hydraulic pressure, so as to enable the main winch to unwind synchronously when the auxiliary winch winds up, and enable the auxiliary winch to unwind synchronously when the main winch winds up.