CLAIMS

1. A single-upright-column mooring type wellhead production operation platform, the platform comprising:

an upright column body of a hollow structure;

a positioning and mounting assembly arranged at a bottom of the upright column body, the upright column body is steadily placed in a sea area of an oilfield by means of the positioning and mounting assembly;

a rotating table arranged outside the upright column body and rotatable around an axis of the upright column body, the rotating table comprising a mooring connection apparatus;

an oil extraction operation platform arranged on the top of the upright column body and located above the rotating table, the oil extraction operation platform being provided with an oil extraction operation assembly; and

at least one inner well slot arranged in the upright column body, the inner well slots being capable of being connected to the oil extraction operation platform.

2. The single-upright-column mooring type wellhead production operation platform according to claim 1, wherein the positioning and mounting assembly comprises a plurality of~~several~~ pile foundations and a conduit that connects the pile foundations with the upright column body.

3. The single-upright-column mooring type wellhead production operation platform according to claim 1, wherein the positioning and mounting assembly comprises a pile foundation column body that extends downwards along a bottom of the upright column body.

4. The single-upright-column mooring type wellhead production operation platform according to claim 1, wherein the rotating table comprises a rotating table main body and a rotating table bearing, an inner ring of the rotating table bearing being fixedly connected with the upright column body.

5. The single-upright-column mooring type wellhead production operation platform according to claim 1, the platform further comprising a rotary conveying assembly connected with the rotating table, the rotary conveying assembly comprising:

a plurality of~~several~~ rotary conveying joints, each of the rotary conveying joints comprising:

an inner conveying ring fixedly connected with the upright column body;

an outer conveying ring following the rotating table to rotate relative to the inner conveying ring,

wherein a conveying structure capable of keeping conveying in a rotating process is arranged between the inner conveying ring and the outer conveying ring;

an inner conveying unit connected with the conveying structure and the oil extraction operation assembly; and

an outer conveying unit connected with the conveying structure.

6. The single-upright-column mooring type wellhead production operation platform according to claim 1, wherein the oil extraction operation platform comprises a wellhead deck, and the oil extraction operation assembly comprises at least one of an oil extraction tree, a manifold terminal and a production auxiliary system.

7. The single-upright-column mooring type wellhead production operation platform according to claim 6, wherein the oil extraction operation platform further comprises a well repair deck arranged above the wellhead deck and is used to bear a well repair device.

8. The single-upright-column mooring type wellhead production operation platform according to claim 1, wherein the inner well slot comprises a riser connected with the oil extraction operation platform or the oil extraction operation assembly; and

the upright column body is internally provided with a positioning and isolating structure that supports the riser.

9. The single-upright-column mooring type wellhead production operation platform according to claim 1, wherein the mooring connection apparatus comprises a rotating joint and a disconnecting apparatus arranged on the rotating joint, the disconnecting apparatus being configured to remove a connection between the rotating joint and the rotating table or the disconnecting apparatus being configured to remove a connection between the disconnecting apparatus and the rotating joint.

10. An oilfield production operation system, the system comprising:

the single-upright-column mooring type wellhead production operation platform according to any one of claims 1-9;

a floating production oil storing and unloading apparatus; and

a mooring apparatus that connects the floating production oil storing and unloading apparatus with the mooring connection apparatus.

11. A single-upright-column type wellhead production operation platform, the platform comprising:

an upright column body of a hollow structure;

a positioning and mounting assembly arranged at a bottom of the upright column body, the upright column body is steadily placed in a sea area of an oilfield by means of the positioning and mounting assembly;

an oil extraction operation platform arranged on the top of the upright column body, the oil extraction operation platform being provided with an oil extraction operation assembly, the oil extraction operation platform comprises a wellhead deck, and the oil extraction operation assembly comprises an oil extraction tree, a manifold terminal and a production auxiliary system; and

at least one inner well slot arranged in the upright column body, the inner well slots being capable of being connected to the oil extraction operation platform.

12. The single-upright-column type wellhead production operation platform according to claim 11, wherein the positioning and mounting assembly comprises a plurality of~~several~~ pile foundations and a conduit that connects the pile foundations with the upright column body.

13. The single-upright-column type wellhead production operation platform according to claim 11, wherein the positioning and mounting assembly comprises a pile foundation column body that extends downwards along a bottom of the upright column body.

14. The single-upright-column type wellhead production operation platform according to claim 11, wherein a radial dimension of a hollow portion of the upright column body ranges from 2m to 6m.

15. The single-upright-column type wellhead production operation platform according to claim 11, wherein the inner well slot comprises a riser connected with the oil extraction operation platform or the oil extraction operation assembly; and

the upright column body is internally provided with a positioning and isolating structure that supports the riser.

16. The single-upright-column type wellhead production operation platform according to claim 15, wherein there are a plurality of risers; and

the positioning and isolating structure comprises:

a plurality of positioning rings sleeved outside the risers, the positioning rings being connected successively via a connecting rib; and

a radial support connected with the positioning rings and/or the connecting rib, the radial support leaning against or being connected with an inner wall of the hollow portion of the upright column body.

17. The single-upright-column type wellhead production operation platform according to claim 16, wherein the risers are circumferentially and evenly distributed around an axis of the upright column body.

~~18. The single-upright-column type wellhead production operation platform according to claim 11, wherein the oil extraction operation platform comprises a wellhead deck, and the oil extraction operation assembly comprises at least one of an oil extraction tree, a manifold terminal and a production auxiliary system.~~

~~19~~18. The single-upright-column type wellhead production operation platform according to claim ~~18~~11, wherein the oil extraction operation platform further comprises a well repair deck arranged above the wellhead deck and is used to bear a well repair device.

~~20~~19. The single-upright-column type wellhead production operation platform according to claim ~~18~~ 11 or ~~19~~18, wherein the oil extraction operation platform further comprises a manifold deck and/or a water injection deck and/or an embarkation deck.

~~21. A rotary mooring conveying system, the system comprising several rotary conveying joints,~~

~~each of the rotary conveying joints comprising:~~

~~an inner conveying ring;~~

~~an outer conveying ring capable of rotating relative to the inner conveying ring,~~

~~wherein a conveying structure capable of keeping conveying in a rotating process is arranged between the inner conveying ring and the outer conveying ring; and~~

~~an inner conveying unit, the inner conveying unit being connected with the inner conveying ring; and~~

~~an outer conveying unit, the outer conveying unit being connected with the outer conveying ring,~~

~~wherein the inner conveying rings of the rotary conveying joints are fixedly connected.~~

~~22. The rotary mooring conveying system according to claim 21, wherein the several rotary conveying joints are successively arranged from top to bottom, and inner conveying units connected with the inner conveying rings of the rotary conveying joints~~

~~located below penetrate through inner channels formed in the inner conveying rings of the rotary conveying joints above.~~

~~23. The rotary mooring conveying system according to claim 21 or 22, wherein at least one rotary conveying joint is a fluid conveying joint.~~

~~24. The rotary mooring conveying system according to claim 23, wherein the conveying structure is an annular fluid groove formed between the inner conveying ring and the outer conveying ring, the inner conveying unit comprises a fluid pipeline, and the fluid pipeline is communicated with the annular fluid groove.~~

~~25. The rotary mooring conveying system according to claim 23, wherein a fluid conveyed by the fluid conveying joint is selected from one or more of water, oil and gas.~~

~~26. The rotary mooring conveying system according to claim 24 or 25, wherein a dynamic seal ring is arranged between the inner conveying ring and the outer conveying ring to form a sealing structure that isolates the annular fluid groove and outside.~~

~~27. The rotary mooring conveying system according to claim 21, wherein at least one rotary conveying joint is an energy conveying joint, the conveying structure is an electric brush arranged between the inner conveying ring and the outer conveying ring, and the inner conveying unit comprises a power supply line electrically connected with the electric brush, or~~

~~at least one rotary conveying joint is a data transmission joint, the transmission structure is an electric brush arranged between the inner conveying ring and the outer conveying ring, and the inner conveying unit comprises a data line electrically connected with the electric brush.~~

~~28. The rotary mooring conveying system according to claim 26, wherein a dynamic seal ring is arranged between the inner conveying ring and the outer conveying ring to form a sealing structure that isolates the annular fluid groove and outside.~~

~~29. The rotary mooring conveying system according to claim 21, wherein a bearing is arranged between the inner conveying ring and the outer conveying ring.~~

~~30. The rotary mooring conveying system according to claim 21, the system further comprising a rotating table, the rotating table being connected with each outer conveying ring.~~