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Octrooihouder(s):
**Jiangxi Wotai Environmental Protection
Technology Co., Ltd. te Yingtan City, China,
CN**

(72)

Uitvinder(s):
**Junfang Jin te Yingtan City (CN)
Xiaoshuai Wang te Yingtan City (CN)
Xugang Wang te Yingtan City (CN)**

(74)

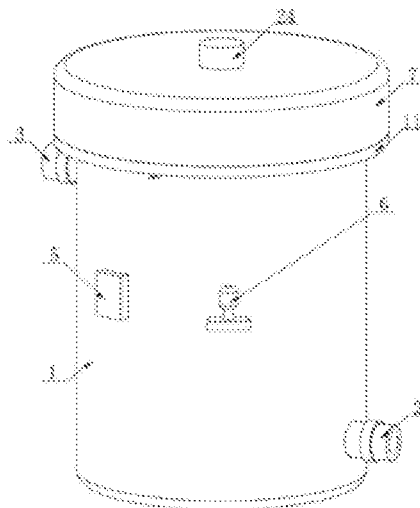
Gemachtigde:
ir. M.B. Plaggenborg te Almere

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REAL-TIME WATER QUALITY MONITORING DEVICE OF WATER PURIFIER

(57)

The present disclosure discloses a real-time water quality monitoring device of water purifier, and the technical solution is including a machine body, wherein two sides of the machine body are fixedly connected with a water inlet pipe and a water outlet pipe, an outside of the water inlet pipe and an outside of the water outlet pipe are fixedly connected with a switching valve, and an inner cavity of the machine body is provided with a detection mechanism; A middle of an inner wall of the machine body has a placement slot, a water quality sensor is arranged inside the placement slot, and the water quality sensor is arranged inside the placement slot and is movably sleeved with an inner wall of the machine body, one side of an outer wall of the machine body is fixedly connected with a programmable PLC.



REAL-TIME WATER QUALITY MONITORING DEVICE OF WATER PURIFIER

5 **TECHNICAL FIELD**

The present disclosure relates to the technical field of water quality monitoring, and specifically relates to a seat and a real-time water quality monitoring device of water purifier.

10 **BACKGROUND**

The water purifier is a water treatment equipment that deeply filters and purifies the water according to the requirements for water use. The impact of drinking water on human health is mainly considered, in addition to physical and chemical indicators, the
15 water quality standard also includes microbial indicators. With the improvement of people's living standards, people's requirements for the quality of drinking water are constantly improving, and the standards for drinking water quality are also developing and improving accordingly.

20 Most of the core filter elements of existing water purifiers are composed of membranes and carbon, and the filtered water is directly consumed by people or further boiled for drinking. However, the existing water purifiers only realize the function of filtering the water source, but they cannot detect the sanitary degree of the water source, which is easy to cause people to be difficult to distinguish the sanitary degree of the water source.
25

SUMMARY

Therefore, for the present disclosure, the water quality sensor is located in the middle of the inner wall of the body, which
30 can effectively detect the purified water quality of the purifier and avoid health problems for drinkers, and to solve the problem that the existing water purifier can filter the water source, but can not detect the sanitary degree of the water source, which
35 makes it difficult for people to distinguish the sanitary degree of the water source.

In order to achieve the purpose mentioned above, the present

disclosure provides the technical solutions as follows. A real-time water quality monitoring device of water purifier, including a machine body, wherein two sides of the machine body are fixedly connected with a water inlet pipe and a water outlet pipe, an outside of the water inlet pipe and an outside of the water outlet pipe are fixedly connected with a switching valve, and an inner cavity of the machine body is provided with a detection mechanism;

A middle of an inner wall of the machine body has a placement slot, a water quality sensor is arranged inside the placement slot, and the water quality sensor is arranged inside the placement slot and is movably sleeved with an inner wall of the machine body, one side of an outer wall of the machine body is fixedly connected with a programmable PLC, and the other side of the outer wall of the machine body is fixedly connected with a supporting plate, a top of the supporting plate is fixedly connected with an alertor, and the water quality sensor is electrically connected with the programmable PLC through an A/D converter, the programmable PLC is electrically connected with the alertor through a D/A converter.

Specifically, the water quality sensor is located in the middle of the inner wall of the body, which can effectively detect the purified water quality of the purifier and avoid health problems for drinkers, and to solve the problem that the existing water purifier can filter the water source, but can not detect the sanitary degree of the water source, which makes it difficult for people to distinguish the sanitary degree of the water source.

Preferably, a top of the machine body is provided with a sealing component, and the sealing component includes a machine cover, the machine cover is provided on the top of the machine body and is movably sleeved with the machine body, a connecting ring is fixedly connected to a bottom edge of the machine cover, a top edge of the machine body has a limiting groove, and the connecting ring is arranged inside the limiting groove and is movably sleeved with the machine body, a sealing gasket is movably sleeved inside the limiting groove, and a bottom of the connecting ring is in contact with the sealing gasket.

Specifically, the top of the machine body can be effectively

sealed through the sealing gasket and the movable sleeve connection between the limiting groove and the connecting ring.

Preferably, a bearing plate is fixedly connected to the top of the outer side of the machine body and the top of the bearing plate has a plurality of special-shaped holes, the bottom edge of the machine cover has a plurality of threaded grooves, and a first threaded rod is threadedly connected inside the threaded groove, the first threaded rod is arranged inside the special-shaped hole and is movably sleeved with the bearing plate, a shaft center at the bottom of the first threaded rod is rotationally connected with a special-shaped block through a bearing, and the special-shaped block is arranged inside the special-shaped hole and is movably sleeved with the bearing plate.

Specifically, the cover and the body can be effectively fixed through the threaded connection between the first threaded rod and the cover, and the rotation of the first threaded rod can be effectively controlled by the special-shaped block through the movable sleeved and mutual fit between the special-shaped block and the special-shaped hole.

Preferably, the bottom edge of the first threaded rod has an arc groove, a sliding block is fixedly connected at the top edge of the special-shaped hole, and the sliding block is arranged inside the arc groove and slidably connected with the first threaded rod.

Specifically, the rotation of the first threaded rod can be effectively controlled through the special-shaped block through the sliding connection between the sliding block and the arc groove. When the machine cover needs to be fixed, the user turns the special-shaped block to make the sliding block at the bottom of the special-shaped block move inside the arc groove. When the sliding block moves to one end of the arc groove, the special-shaped block drives the first threaded rod to rotate through the sliding block, so as to fix the machine cover through the threaded connection between the first threaded rod and the machine cover. When the machine cover needs to be disassembled, the special-shaped block is turned to drive the sliding clamp block to move inside the arc groove, and the first threaded rod does not move.

When the special-shaped block is coincided with the special-shaped hole, the machine cover can be effectively disassembled through the movable sleeved connection and matching between the special-shaped block and the special-shaped hole, so as to avoid the
5 thread rotation between the first threaded rod and the machine cover, and avoid the damage of the thread on the surface of the first threaded rod.

Preferably, both ends of the special-shaped block are provided with movable blocks, both ends of the side of the movable block
10 close to the special-shaped block are fixedly connected with connecting rods, the bottom end of the connecting rods is fixedly connected with connecting blocks, both sides of the special-shaped block have first sliding grooves, and the connecting blocks are arranged in the first sliding groove and are slidably connected
15 with the special-shaped block.

Specifically, the two sides of the special-shaped block can be effectively lengthened through the sliding connection between the connecting block and the first sliding groove, thus avoiding the complete coincidence between the special-shaped block and the
20 special-shaped hole and resulting in the coincidence between the special-shaped block and the special-shaped hole when rotating

Preferably, the inner cavity of the machine body is provided with a mixing component, and the mixing component includes a moving part, the outer side of the moving part is fixedly connected
25 with a plurality of mixing rods, and the plurality of mixing rods are distributed in a circular array, the shaft center at the bottom of the machine body is fixedly connected with a reciprocating lead screw, the outer side of the reciprocating lead screw is sleeved with a bearing seat, and the bearing seat is connected
30 with the reciprocating lead screw through a ball nut pair. The moving part is fixedly connected with the bearing seat.

Specifically, the threaded connection between the moving part and the reciprocating lead screw can effectively drive the moving part lifting and lowering, so as to stir the purified water inside
35 the machine body up and down.

Preferably, the top of the machine cover is rotationally connected with a connecting shaft through the bearing, the top of the

machine cover is fixedly connected with a motor, and the output end of the motor is fixedly connected with the top of the connecting shaft, the bottom of the connecting shaft is fixedly connected with a plurality of fixing plates, the bottom of the fixing plate
5 is fixedly connected with a limiting rod, and the limiting rod runs through the top of the mixing rod and is movably sleeved with the mixing rod.

Specifically, the motor is driven to bring the connecting shaft and the bottom fixing plate to rotate to drive the limiting
10 rod to rotate. The movable sleeved connection between the limiting rod and the mixing rod can effectively drive the rotation of the mixing rod, so as to stir the purified water inside the machine body horizontally.

Preferably, one end of the mixing rod is provided with a
15 cleaning component, and the cleaning component includes a rotating rod, the outer end of the mixing rod has a rotating groove, and the internal of the rotating groove is fixedly connected with a fixed shaft, and the rotating rod is arranged outside the fixed shaft and is movably hinged with the mixing rod through the rotat-
20 ing groove, both ends of the rotating rod has a clamping groove, one end of the mixing rod is provided with a movable plate, one side of the movable plate is fixedly connected with a cleaning brush, and the other side of the movable plate has a second sliding groove, both ends of the second sliding groove are connected
25 with a moving block, the top of the moving block is fixedly connected with a clamping block, and the clamping block is arranged inside the clamping groove and is movably sleeved with the rotating rod.

Specifically, the movable plate can be easily disassembled
30 through wiping and cleaning the inner wall of the machine body with a cleaning brush and the movable sleeve connection between the clamping block and the clamping groove.

Preferably, the inside of the second sliding groove is rotatablely connected with a second threaded rod through the bearing,
35 the threads on both ends of the outside of the second threaded rod are opposite, the second threaded rod runs through the moving block and is threadedly engaged with the moving block, one end of

the movable plate is provided with a rotating block, and the rotating block is fixedly connected with one end of the second threaded rod.

Specifically, the moving blocks on both sides can be effectively driven to move in opposite direction or back direction by the opposite threads on both ends of the outer side of the second threaded rod, so as to control the coincidence between the clamping block and the clamping groove and facilitate the removal of the moving block.

10 Preferably, the rotating rod in the middle of both sides has a spring groove, and a movable rod is provided inside the spring groove, the bottom of the movable rod is fixedly connected with a limiting block, and the limiting block is provided inside the spring groove and is movably sleeved with the rotating rod, the
15 bottom of the limiting block is fixedly connected with a return spring, the top of the movable rod is fixedly connected with an arc clamping block, both sides of the inner cavity of the rotating groove are provided with an arc clamping groove, and the arc clamping block is arranged in the arc clamping groove and is movably
20 sleeved with the mixing rod.

Specifically, the rotation rod can be effectively fixed through the coincidence between the arc clamping block and the arc clamping groove.

The embodiment of the present disclosure has the following
25 advantages:

For the present disclosure, the water quality sensor is located in the middle of the inner wall of the body, which can effectively detect the purified water quality of the purifier and avoid health problems for drinkers, and to solve the problem that
30 the existing water purifier can filter the water source, but can not detect the sanitary degree of the water source, which makes it difficult for people to distinguish the sanitary degree of the water source.

35 BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings that are required to be used in the description of the embodiments or the conventional technology are

described briefly below, so that the technical solutions according to the embodiments of the present disclosure or according to the conventional technology will become clearer. It is apparent that the accompanying drawings in the following description are only
5 illustrative. For those skilled in the art, other accompanying drawings may be obtained according to these drawings provided, without any creative work.

The structure, proportion, size and the like shown in the present specification are only used to cooperate with the contents
10 disclosed in the specification for those skilled in the art to understand and read, and are not intended to limit the conditions with which the present disclosure can be implemented. Therefore, they have no practical significance in a technical sense. Any modification to the structure, any change of the proportions or any
15 adjustment of the size should fall within the scope covered by the technical contents disclosed in the present disclosure without influencing the effects and objects that can be achieved by the present disclosure.

FIG. 1 is an overall schematic structural diagram according
20 to the present disclosure.

FIG. 2 is a sectional view of a machine body according to the present disclosure.

FIG. 3 is a schematic structural diagram of a detection mechanism according to the present disclosure.

25 FIG. 4 is a schematic structural diagram of the machine body according to the present disclosure.

FIG. 5 is an exploded view of a special-shaped block according to the present disclosure.

FIG. 6 is a sectional view of the special-shaped block ac-
30 cording to the present disclosure.

FIG. 7 is a sectional view of a mixing rod according to the present disclosure.

FIG. 8 is a sectional view of a rotating rod according to the present disclosure.

35 FIG. 9 is a sectional view of a movable plate according to the present disclosure.

FIG. 10 is a schematic diagram of a system according to the

present disclosure.

The reference numbers in the drawings are as follows: 1. machine body, 2. water inlet pipe, 3. water outlet pipe, 4. water quality sensor, 5. programmable PLC, 6. alertor, 7. machine cover, 8. connecting ring, 9. limiting groove, 10. sealing gasket, 11. bearing plate, 12. special-shaped hole, 13. first threaded rod, 14. special-shaped block, 15. arc groove, 16. sliding block, 17. movable block, 18. connecting rod, 19. connecting block, 20. movable part, 21. mixing rod, 22. reciprocating lead screw, 23. connecting shaft, 24. motor, 25. fixing plate, 26. limiting rod, 27. rotating rod, 28. rotating groove, 29. clamping groove, 30. movable plate, 31. cleaning brush, 32. second sliding groove, 33. moving block, 34. clamping block, 35. second threaded rod, 36. rotating block, 37. movable rod, 38. limiting block, 39. return spring, 40. arc clamping block, 41. arc clamping groove.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Implementations of the present disclosure is illustrated through specific embodiments below. Those skilled in the art can easily understand other advantages and effects of the present disclosure from the contents disclosed in this specification. Obviously, the described embodiments are part of, but not all of, the embodiments of the present disclosure. Based on the embodiments of the present disclosure, all other embodiments obtained by those of ordinary skills in the art without creative work belong to the scope claimed by the present disclosure.

Please referring to FIGS. 1-10, the present disclosure provides a real-time water quality monitoring device of water purifier, including a machine body 1, two sides of the machine body 1 are fixedly connected with a water inlet pipe 2 and a water outlet pipe 3. An outside of the water inlet pipe 2 and an outside of the water outlet pipe 3 are fixedly connected with a switching valve, and an inner cavity of the machine body 1 is provided with a detection mechanism.

A middle of an inner wall of the machine body 1 has a placement slot, a water quality sensor 4 is arranged inside the placement slot, the water quality sensor 4 is arranged inside the

placement slot and is movably sleeved with an inner wall of the machine body 1. one side of an outer wall of the machine body 1 is fixedly connected with a programmable PLC 5, and the other side of the outer wall of the machine body 1 is fixedly connected with a supporting plate. A top of the supporting plate is fixedly connected with an alertor 6, and the water quality sensor 4 is electrically connected with the programmable PLC 5 through an A/D converter. The programmable PLC 5 is electrically connected with the alertor 6 through a D/A converter.

10 In this implementation solution, the water quality sensor 4 mainly detects the water to determine whether the water quality is qualified. The model of the water quality sensor 4 is SE-564-ORP. The water is purified by a purifier and then passed into the machine body 1. The water is detected through the water quality sensor 4, then the water quality sensor 4 transmits the information to the programmable PLC 5 through the A/D converter. At the same time, the programmable PLC 5 controls the alertor 6 through the D/A converter. When the alertor 6 gives an alarm, it means that the water quality is unqualified, and when the alertor 6 does not
20 alarm, it means that the water quality is qualified for drinking directly.

Wherein, in order to achieve the purpose of fixing and sealing between the machine body 1 and the machine cover 7, the following technical solution is adopted for the device. A top of the machine body 1 is provided with a sealing component, and the sealing component includes a machine cover 7. The machine cover 7 is provided on the top of the machine body 1 and is movably sleeved with the machine body 1. A connecting ring 8 is fixedly connected to a bottom edge of the machine cover 7. A top edge of the machine
25 body 1 has a limiting groove 9, and the connecting ring 8 is arranged inside the limiting groove 9 and is movably sleeved with the machine body 1. A sealing gasket 10 is movably sleeved inside the limiting groove 9, and a bottom of the connecting ring 8 is in contact with the sealing gasket 10. A bearing plate 11 is fixedly
30 connected to the top of the outer side of the machine body 1 and the top of the bearing plate 11 has a plurality of special-shaped holes 12. The bottom edge of the machine cover 7 has a plurality

of threaded grooves, and a first threaded rod 13 is threadedly connected inside the threaded groove. The first threaded rod 13 is arranged inside the special-shaped hole 12 and is movably sleeved with the bearing plate 11. A shaft center at the bottom of the first threaded rod 13 is rotationally connected with a special-shaped block 14 through a bearing. The special-shaped block 14 is arranged inside the special-shaped hole 12 and is movably sleeved with the bearing plate 11. The bottom edge of the first threaded rod 13 has an arc groove 15. A sliding block 16 is fixedly connected at the top edge of the special-shaped hole 12, and the sliding block 16 is arranged inside the arc groove 15 and slidably connected with the first threaded rod 13. Both ends of the special-shaped block 14 are provided with movable blocks 17, both ends of the side of the movable block 17 close to the special-shaped block 14 are fixedly connected with connecting rods 18. The bottom end of the connecting rods 18 is fixedly connected with connecting blocks 19. Both sides of the special-shaped block 14 have first sliding grooves, and the connecting blocks 19 are arranged in the first sliding groove and are slidably connected with the special-shaped block 14.

A cross section shapes of the special-shaped block 14 and the special-shaped hole 12 are both circular shapes and fixed rectangles on both sides of the circular shapes. The overall cross section formed by the coincidence of the two ends of the special-shaped block 14 with the movable block 17 is the same size and consistent with the cross section of the special-shaped hole 12. The complete coincidence is avoided between the special-shaped block 14 and the special-shaped hole 12 when rotating the special-shaped block 14, which causes the special-shaped block 14 to coincide with the special-shaped hole 12 when rotating, and finally causes the special-shaped block 14 to enter the interior of the special-shaped hole 12. The machine cover 7 is placed on the top of the machine body 1 by a user, then the special-shaped block 14 and the movable block 17 is penetrated through the special-shaped hole 12, so that the special-shaped block 14 is located at the bottom of the bearing plate 11. After that, the movable block 17 is moved outward through a sliding connection between the connect-

ing rod 18 and the special-shaped block 14. Finally, the special-shaped block 14 is rotated so that the sliding block 16 at the bottom of the special-shaped block 14 moves inside the arc groove 15. When the sliding block 16 is moves to one end of the arc groove 15, the special-shaped block 14 drives the first threaded rod 13 to rotate through the sliding block 16 to fix the machine cover 7 through the threaded connection between the first threaded rod 13 and the machine cover 7. At the same time, the machine cover 7 is moved downward through the threaded connection to squeeze the sealing gasket 10, and sealing the gap between the machine cover 7 and the machine body 1. When the machine cover 7 needs to be disassembled, the special-shaped block 14 is turned to drive the sliding clamp block 34 to move inside the arc groove 15, and the first threaded rod 13 does not move. When the special-shaped block 14 is coincided with the special-shaped hole 12, the machine cover 7 can be effectively disassembled through the movable sleeved connection and matching between the special-shaped block 14 and the special-shaped hole 12, so as to avoid the thread rotation between the first threaded rod 13 and the machine cover 7, and avoid the damage of the thread on the surface of the first threaded rod 13.

Wherein, in order to achieve the purpose of mixing of purified water and make the purified water fully mixed, which is conducive to the detection of water quality sensor 4, the following technical solution is adopted for the device. The inner cavity of the machine body 1 is provided with a mixing component. The mixing component includes a moving part 20, the outer side of the moving part 20 is fixedly connected with a plurality of mixing rods 21, and the plurality of mixing rods 21 are distributed in a circular array. The shaft center at the bottom of the machine body 1 is fixedly connected with a reciprocating lead screw 22, the outer side of the reciprocating lead screw 22 is sleeved with a bearing seat, and the bearing seat is connected with the reciprocating lead screw 22 through a ball nut pair. The moving part 20 is fixedly connected with the bearing seat, and the top of the machine cover 7 is rotationally connected with a connecting shaft 23 through the bearing. The top of the machine cover 7 is fixedly

connected with a motor 24, and the output end of the motor 24 is fixedly connected with the top of the connecting shaft 23. The bottom of the connecting shaft 23 is fixedly connected with a plurality of fixing plates 25. The bottom of the fixing plate 25 is
5 fixedly connected with a limiting rod 26, and the limiting rod 26 runs through the top of the mixing rod 21 and is movably sleeved with the mixing rod 21.

The top section of the reciprocating lead screw 22 is unthreaded. Before the purified water inside the machine body 1 is
10 tested, the motor 24 is driven to bring the connecting shaft 23 and the bottom fixing plate 25 to rotate to drive the limiting rod 26 to rotate. The movable sleeved connection between the limiting rod 26 and the mixing rod 21 can effectively drive the rotation of the mixing rod 21, so as to stir the purified water inside the ma-
15 chine body 1 horizontally. When the mixing rod 21 is rotated horizontally, the screw connection between the moving part 20 and the reciprocating lead screw 22 drives the mixing rod 21 to move up and down, so that the mixing rod 21 can rise and fall while rotating to realize fully stirring the water.

20 Wherein, in order to achieve the purpose of cleaning the inner wall of the machine body 1, the following technical solution is adopted for the device. One end of the mixing rod 21 is provided with a cleaning component, the cleaning component includes a rotating rod 27. The outer end of the mixing rod 21 has a rotating
25 groove 28, and the internal of the rotating groove 28 is fixedly connected with a fixed shaft. The rotating rod 27 is arranged outside the fixed shaft and is movably hinged with the mixing rod 21 through the rotating groove 28. Both ends of the rotating rod 27 has a clamping groove 29. One end of the mixing rod 21 is provided
30 with a movable plate 30. One side of the movable plate 30 is fixedly connected with a cleaning brush 31, and the other side of the movable plate 30 has a second sliding groove 32. Both ends of the second sliding groove 32 are connected with a moving block 33, the top of the moving block 33 is fixedly connected with a clamping
35 block 34, and the clamping block 34 is arranged inside the clamping groove 29 and is movably sleeved with the rotating rod 27. The inside of the second sliding groove 32 is rotatably connected

with a second threaded rod 35 through the bearing. The threads on both ends of the outside of the second threaded rod 35 are opposite. The second threaded rod 35 runs through the moving block 33 and is threadedly engaged with the moving block 33. One end of the movable plate 30 is provided with a rotating block 36, and the rotating block 36 is fixedly connected with one end of the second threaded rod 35. The rotating rod 27 in the middle of both sides has a spring groove, and a movable rod 37 is provided inside the spring groove. The bottom of the movable rod 37 is fixedly connected with a limiting block 38, and the limiting block 38 is provided inside the spring groove and is movably sleeved with the rotating rod 27. The bottom of the limiting block 38 is fixedly connected with a return spring 39. The top of the movable rod 37 is fixedly connected with an arc clamping block 40, both sides of the inner cavity of the rotating groove 28 are provided with an arc clamping groove 41, and the arc clamping block 40 is arranged in the arc clamping groove 41 and is movably sleeved with the mixing rod 21.

Before mixing and testing the water, the user needs to clean the inner wall of the machine body 1. At this time, the user moves the rotating rod 27 to one end through the movable sleeved connection between the arc clamping block 40 and the arc clamping groove and the elastic force provided by the return spring 39, so that the rotating rod 27 is collinear with the mixing rod 21. Then the user places one end of the movable plate 30 on one end of the rotating rod 27. At this time, the second threaded rod 35 is rotated through the rotating block 36. Since the two ends of the outer side of the second threaded rod 35 have opposite threads, the moving blocks 33 on both sides move in opposite directions, so that the clamping block 34 coincides with the clamping groove 29, and then the movable plate 30 is fixed. Finally, the rotation of the mixing rod 21 is controlled through the stirring component, so as to clean the inner wall of the machine body 1 through the cleaning brush to avoid error caused by unsanitary inner wall of the machine body 1.

The use process of the invention is as follows. When using the present disclosure, the user first needs to clean the inner

wall of the machine body 1. At this time, the user moves the rotating rod 27 to one end through the movable sleeved connection between the arc clamping block 40 and the arc clamping groove and the elastic force provided by the return spring 39, so that the rotating rod 27 is collinear with the mixing rod 21. Then the user places one end of the movable plate 30 on one end of the rotating rod 27. At this time, the second threaded rod 35 is rotated through the rotating block 36. Since the two ends of the outer side of the second threaded rod 35 have opposite threads, the moving blocks 33 on both sides move in opposite directions, so that the clamping block 34 coincides with the clamping groove 29, and then the movable plate 30 is fixed. After that, the user places the machine cover 7 on the top of the machine body 1, and at the same time, the top of the reciprocating lead screw 22 penetrates through the moving part 20 through the threadless on the top of the reciprocating lead screw 22. Then the motor 24 is driven to bring the connecting shaft 23 and the fixed plate 25 at the bottom to rotate, so as to drive the limit rod 26 to rotate. The movable sleeve connection between the limiting rod 26 and the mixing rod 21 can effectively drive the rotation of the mixing rod 21 to stir the purified water inside the machine body 1 horizontally. When the mixing rod 21 rotates horizontally, the screw connection between the moving part 20 and the reciprocating lead screw 22 drives the mixing rod 21 to move up and down, and the mixing rod 21 can rise and fall while rotating and further clean the inner wall of the machine body 1 with the cleaning brush. Finally, the machine cover 7 is taken out, and the moving block 33 is driven to move backward through the second threaded rod 35, so that the clamping block 34 is separated from the clamping groove 29, and further the movable plate 30 is removed.

After cleaning the inner wall of the machine body 1, the user installs the machine cover 7 again. When installing the machine cover 7, the machine cover 7 is placed on the top of the machine body 1 so that the special-shaped block 14 and the movable block 17 pass through the special-shaped hole 12, and the special-shaped block 14 is located at the bottom of the bearing plate 11. Then the movable block 17 is moved outward through the sliding connec-

tion between the connecting rod 18 and the special-shaped block 14, and the special-shaped block 14 is rotated to make the sliding block 16 at the bottom of the special-shaped block 14 move inside the arc groove 15. When the sliding block 16 moves to one end of the arc groove 15, the special-shaped block 14 drives the first threaded rod 13 to rotate through the sliding block 16, so as to fix the machine cover 7 through the threaded connection between the first threaded rod 13 and the machine cover 7. At the same time, the machine cover 7 is moved downward through threaded connection to squeeze the sealing gasket 10 to seal the gap between the machine cover 7 and the machine body 1. When the machine cover 7 needs to be disassembled, the user turns the special-shaped block 14, and the special-shaped block 14 is driven to bring the sliding clamp block 34 to move inside the arc groove 15, at this time, the first threaded rod 13 does not move. When the special-shaped block 14 coincides with the special-shaped hole 12, the machine cover 7 can be effectively disassembled through the movable sleeve connection and matching of the special-shaped block 14 and the special-shaped hole 12.

After the machine cover 7 is fixed, the motor 24 is driven to bring the connecting shaft 23 and the bottom fixing plate 25 to rotate, and then the limiting lever 26 is driven to rotate. The movable sleeved connection between the limiting rod 26 and the mixing rod 21 can effectively drive the rotation of the mixing rod 21 to stir the purified water inside the machine body 1 horizontally. When the mixing rod 21 rotates horizontally, the threaded connection between the moving part 20 and the reciprocating lead screw 22 drives the mixing rod 21 to move up and down, and the mixing rod 21 rises and falls while rotating, so as to fully stir the water to avoid the aggregation of impurities in the water and affect the deviation of the detection of the water quality sensor 4. When the water is stirred, the water quality sensor 4 detects the water and transmits the information to the programmable PLC 5 through the A/D converter. The programmable PLC 5 controls the alertor 6 through the D/A converter. When the alertor 6 gives an alarm, it means that the water quality is unqualified. When the alertor 6 does not give an alarm, it means that the water quality

is qualified for drinking directly.

The description mentioned above is only a preferred embodiment of the present disclosure, and any person skilled in the art may modify the present disclosure or make equivalent replacement
5 to the technical solution by using the described technical solution mentioned above. Therefore, any simple modification or equivalent replacement according to the technical solution of the present disclosure belongs to the protection scope of the present disclosure.

C O N C L U S I E S

1. Real-time bewakingsapparaat voor de waterkwaliteit van een waterzuiveraar, omvattende:
een machinelichaam (1), waarbij
twee zijden van het machinelichaam (1) vast zijn verbonden met een
5 watertoevoerleiding (2) en een waterafvoerleiding (3), een buiten-
zijde van de watertoevoerleiding (2) en een buitenzijde van de wa-
terafvoerleiding (3) vast zijn verbonden met een schakelklep, en
een binnenholte van het machinelichaam (1) is voorzien van een de-
tectiemechanisme; en
10 een midden van een binnenwand van het machinelichaam (1) is voor-
zien van een plaatsingsgleuf, een waterkwaliteitssensor (4) is
aangebracht binnen de plaatsingsgleuf, en de waterkwaliteitssensor
(4) is aangebracht binnen de plaatsingsgleuf en beweegbaar is om-
huld met een binnenwand van het machinelichaam (1), één zijde van
15 een buitenwand van het machinelichaam (1) vast is verbonden met
een programmeerbare PLC (5) en de andere zijde van de buitenmuur
van het machinelichaam (1) vast is verbonden met een steunplaat,
een bovenkant van de steunplaat vast is verbonden met een alarmge-
ver (6) en de waterkwaliteitssensor (4) elektrisch is verbonden
20 met de programmeerbare PLC (5) via een A/D-omzetter, de program-
meerbare PLC(5) elektrisch is verbonden met de alarmgever (6) via
een D/A-omzetter.
2. Real-time bewakingsapparaat voor de waterkwaliteit van een wa-
25 terzuiveraar volgens conclusie 1, waarbij een bovenkant van het
machinelichaam (1) is voorzien van een afdichtcomponent, en de af-
dichtcomponent een machinedeksel (7) omvat, waarbij het machine-
deksel (7) is voorzien op de bovenzijde van het machinelichaam (1)
en beweegbaar is omhuld met het machinelichaam (1), waarbij een
30 verbindingsring (8) vast is verbonden met een onderrand van het
machinedeksel (7), een rand van het machinelichaam (1) een begren-
zingsgroef (9) heeft en de verbindingsring (8) is aangebracht bin-
nen de begrenzingsgroef (9) en beweegbaar is omhuld met het machi-
nelichaam (1), waarbij een afdichtende pakking (10) beweegbaar in

de begrenzingsgroef (9) zit, en een onderkant van de verbindingsring (8) in contact staat met de afdichtende pakking (10).

3. Real-time bewakingsapparaat voor de waterkwaliteit van een waterzuiveraar volgens conclusie 2, waarbij een lagerplaat (11) vast is verbonden met de bovenkant van de buitenzijde van het machine-
 5 lichaam (1) en de bovenkant van de lagerplaat (11) is voorzien van een aantal speciaal gevormde gaten (12), de onderrand van de machinekap (7) een aantal schroefdraadgroeven heeft en een eerste
 10 schroefdraadstang (13) met schroefdraad is verbonden binnen de schroefdraadgroef, de eerste schroefdraad stang (13) is aangebracht binnen het speciaal gevormde gat (12) en beweegbaar met de
 lagerplaat (11) is omhuld, een ascentrum aan de onderkant van de eerste draadstang (13) roterend is verbonden met een speciaal ge-
 15 vormd blok (14) door een lager, en het speciaal gevormde blok (14) is aangebracht binnen het speciaal gevormde gat (12) en beweegbaar is voorzien van een huls met de lagerplaat (11).

4. Real-time bewakingsapparaat voor de waterkwaliteit van een waterzuiveraar volgens conclusie 3, waarbij de onderrand van de eerste draadstang (13) een booggroef (15) heeft, een glijblok (16)
 20 vast is verbonden aan de bovenste rand van het speciaal gevormde gat (12), en het glijblok (16) is aangebracht binnen de booggroef (15) en verschuifbaar is verbonden met de eerste draadstang (13).

25

5. Real-time bewakingsapparaat voor de waterkwaliteit van een waterzuiveraar volgens conclusie 4, waarbij beide uiteinden van het speciaal gevormde blok (14) zijn voorzien van beweegbare blokken
 (17), waarbij beide uiteinden van de zijkant van het beweegbare
 30 blok (17)) dicht bij het speciaal gevormde blok (14) vast zijn verbonden met drijfstangen (18), het onderste uiteinde van de drijfstangen (18) vast is verbonden met verbindingsblokken (19),
 beide zijden van het speciaal gevormde blok (14) zijn voorzien van eerste glijdende groeven, en de verbindingsblokken (19) zijn
 35 aangebracht in de eerste glijdende groef en glijdend zijn verbonden met het speciaal gevormde blok (14).

6. Real-time bewakingsapparaat voor de waterkwaliteit van een waterzuiveraar volgens conclusie 5, waarbij de binnenholte van het machinelichaam (1) is voorzien van een mengcomponent, en de mengcomponent een bewegend deel (20) omvat, de buitenste zijde van het bewegende deel (20) vast is verbonden met een aantal mengstaven (21), en het aantal mengstaven (21) is verdeeld in een cirkelvormige reeks, waarbij het midden van de as aan de onderkant van het machinelichaam (1) vast is verbonden met een heen en weer bewegend schroefspil (22), de buitenzijde van de heen en weer gaande schroefspil (22) is voorzien van een lagerzitting, en de lagerzitting is verbonden met de heen en weer gaande schroefspil (22) via een paar kogelmoeren, waarbij het bewegende deel (20) vast is verbonden met de lagerzitting.

7. Real-time bewakingsapparaat voor de waterkwaliteit van een waterzuiveraar volgens conclusie 6, waarbij de bovenkant van het machinedeksel (7) roterend is verbonden met een verbindingsas (23) door het lager, waarbij de bovenkant van het machinedeksel (7) vast is verbonden met een motor (24), en het uitvoeruiteinde van de motor (24) vast is verbonden met de bovenkant van de verbindingsas (23), waarbij de onderkant van de verbindingsas (23) vast is verbonden met een aantal bevestigingsplaten (25), de onderzijde van de bevestigingsplaat (25) vast is verbonden met een begrenzingsstang (26), en de begrenzingsstang (26) door de bovenzijde van de mengstang (21) loopt en beweegbaar is omhuld met de mengstang (21).

8. Real-time bewakingsapparaat voor de waterkwaliteit van een waterzuiveraar volgens conclusie 7, waarbij één uiteinde van de mengstaaf (21) is voorzien van een reinigingscomponent, en de reinigingscomponent een roterende staaf (27) omvat, het buitenste uiteinde van de mengstaaf (21) is voorzien van een roterende groef (28), en de binnenkant van de roterende groef (28) vast is verbonden met een vaste as, en de roterende staaf (27) is opgesteld buiten de vaste as en beweegbaar scharnierend met de mengstaaf (21) door de roterende groef (28), waarbij beide uiteinden van de roterende staaf (27) zijn voorzien van een klemgroef (29), één uitein-

de van de mengstaaf (21) is voorzien van een beweegbare plaat (30), waarbij een zijde van de beweegbare plaat (30) vast is verbonden met een reinigingsborstel (31), en de andere zijde van de beweegbare plaat (30) is voorzien van een tweede glijgroef (32),
 5 waarbij beide uiteinden van de tweede glijgroef (32) zijn verbonden met een bewegend blok (33), de bovenkant van het bewegend blok (33) vast is verbonden met een klemblok (34), en het klemblok (34) binnen de klemgroef (29) is aangebracht en met de roterende stang (27) beweegbaar is omhuld.

10

9. Real-time bewakingsapparaat voor de waterkwaliteit van een waterzuiveraar volgens conclusie 8, waarbij de binnenkant van de tweede glijdende groef (32) roteerbaar is verbonden met een tweede draadstang (35) door het lager, de schroefdraad aan beide uitein-
 15 den van de buitenkant van de tweede draadstang (35) tegenovergesteld zijn, de tweede draadstang (35) door het bewegende blok (33) loopt en met schroefdraad is gekoppeld aan het bewegende blok (33), het ene uiteinde van de beweegbare plaat (30) is voorzien van een draaiblok (36), en het draaiblok (36) vast is verbonden
 20 met een uiteinde van de tweede draadstang (35).

10. Real-time bewakingsapparaat voor de waterkwaliteit van een waterzuiveraar volgens conclusie 9, waarbij de roterende stang (27) in het midden van beide zijden een veergroef heeft en een beweeg-
 25 bare stang (37) is voorzien binnen de veergroef, de onderkant van de beweegbare stang (37) vast is verbonden met een begrenzingsblok (38), en het begrenzingsblok (38) is voorzien in de veergroef en beweegbaar is omhuld met de roterende stang (27), de onderkant van de begrenzingsstang blok (38) vast is verbonden met een terugstel-
 30 veer (39), de bovenkant van de beweegbare stang (37) vast is verbonden met een boogklemblok (40), beide zijden van de binnenholte van de roterende groef (28) zijn voorzien van een boogklemgroef (41), en het boogklemblok (40) is aangebracht in de boogklemgroef (41) en beweegbaar is omhuld met de mengstaaf (21).

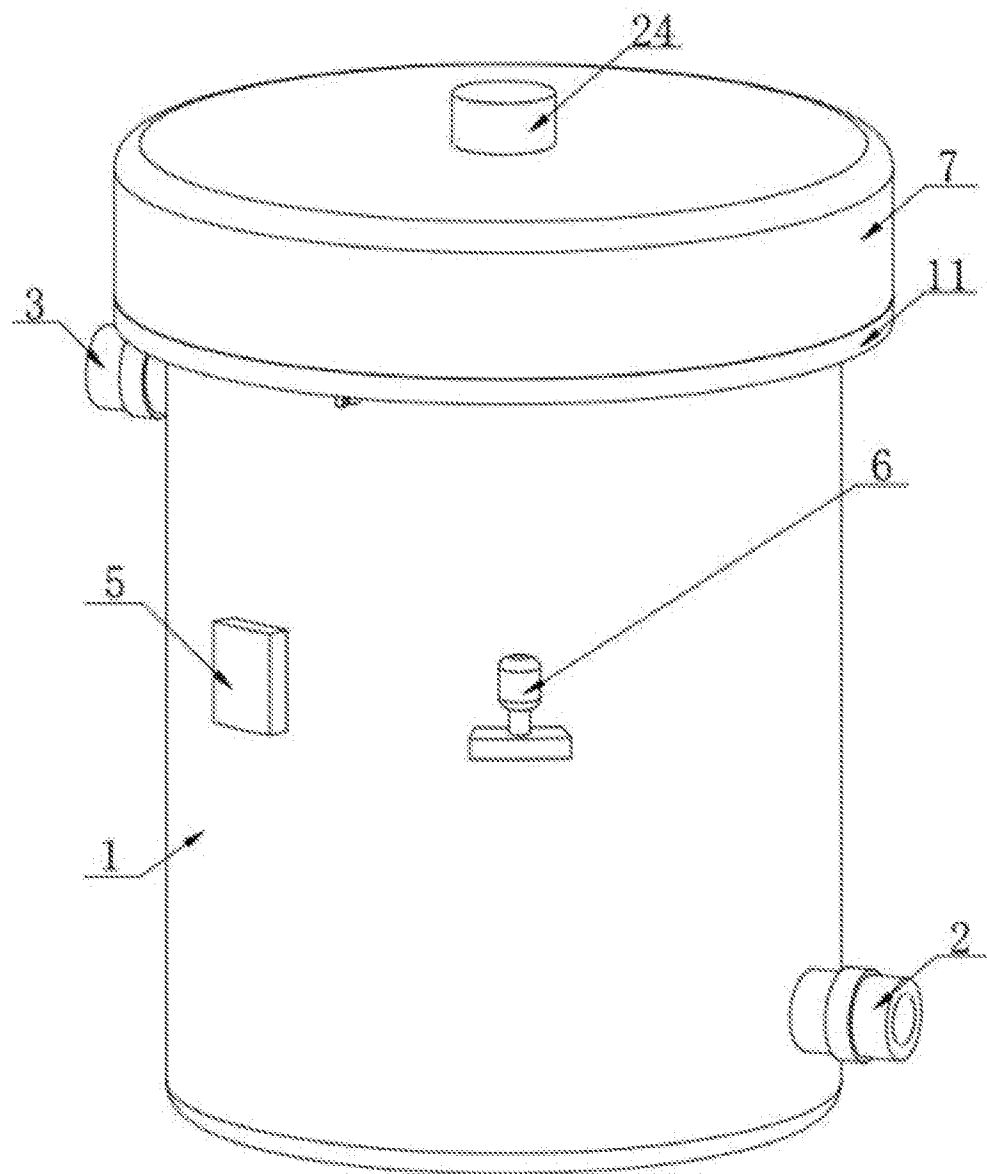


FIG. 1

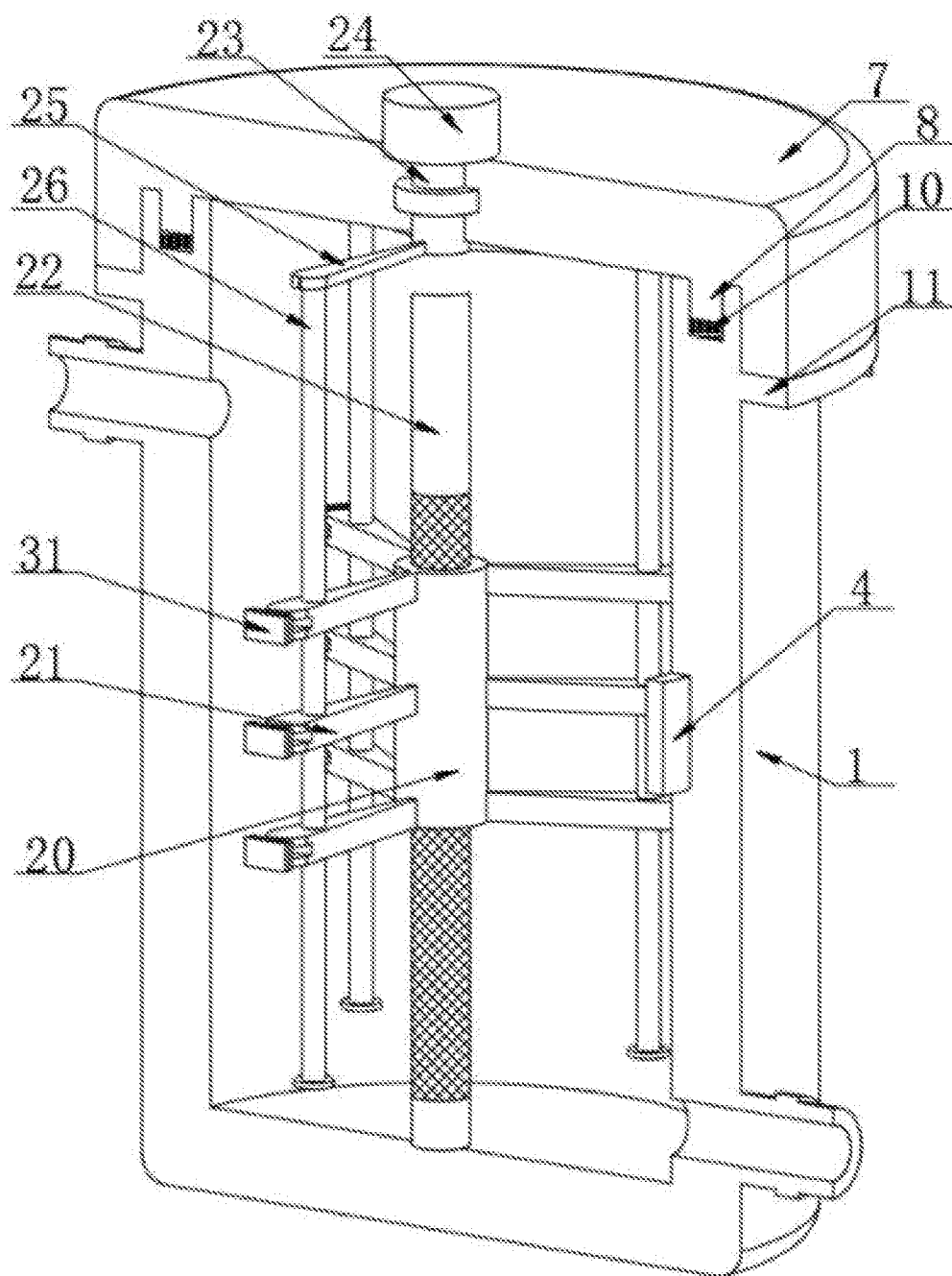


FIG. 2

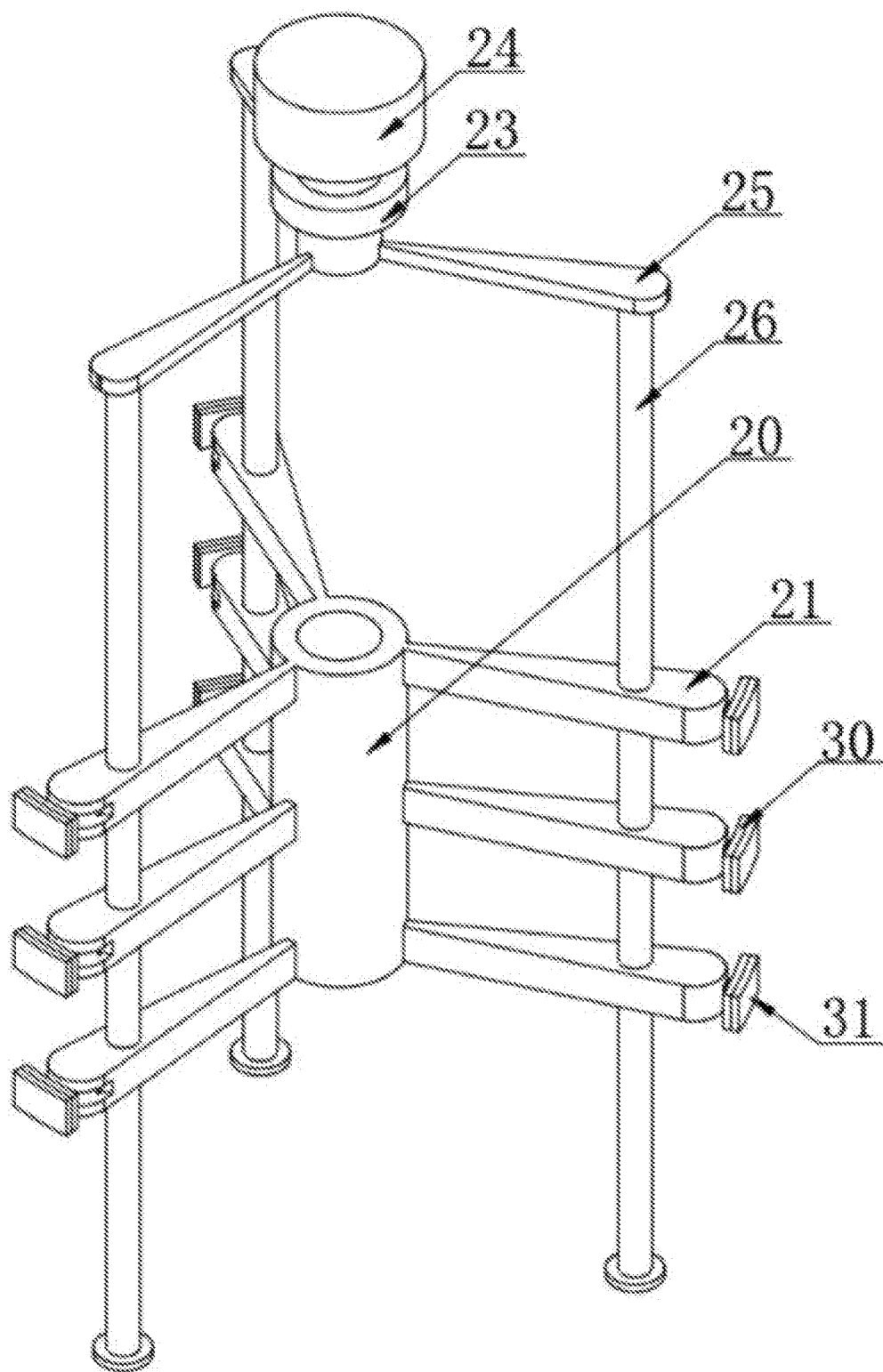


FIG. 3

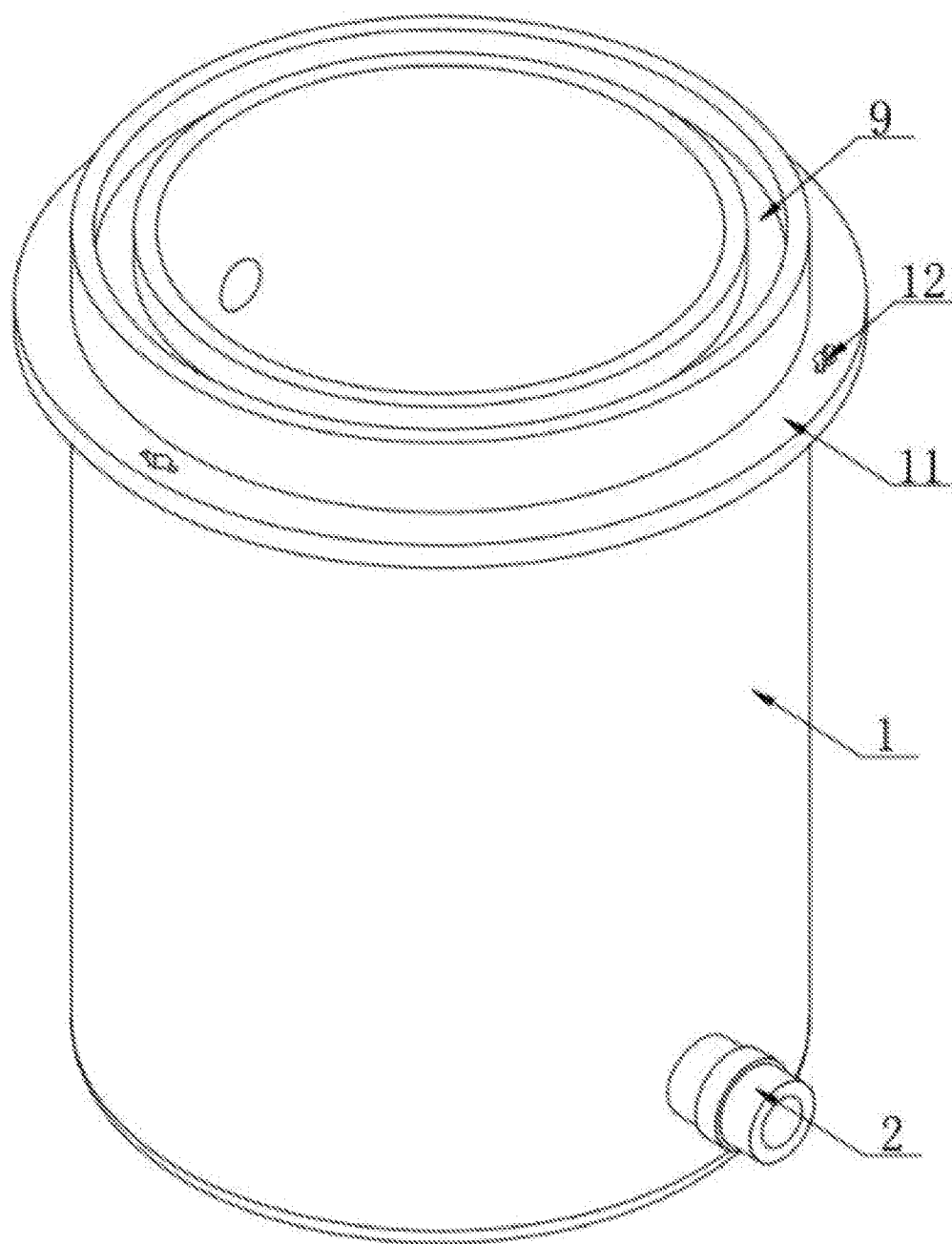


FIG. 4

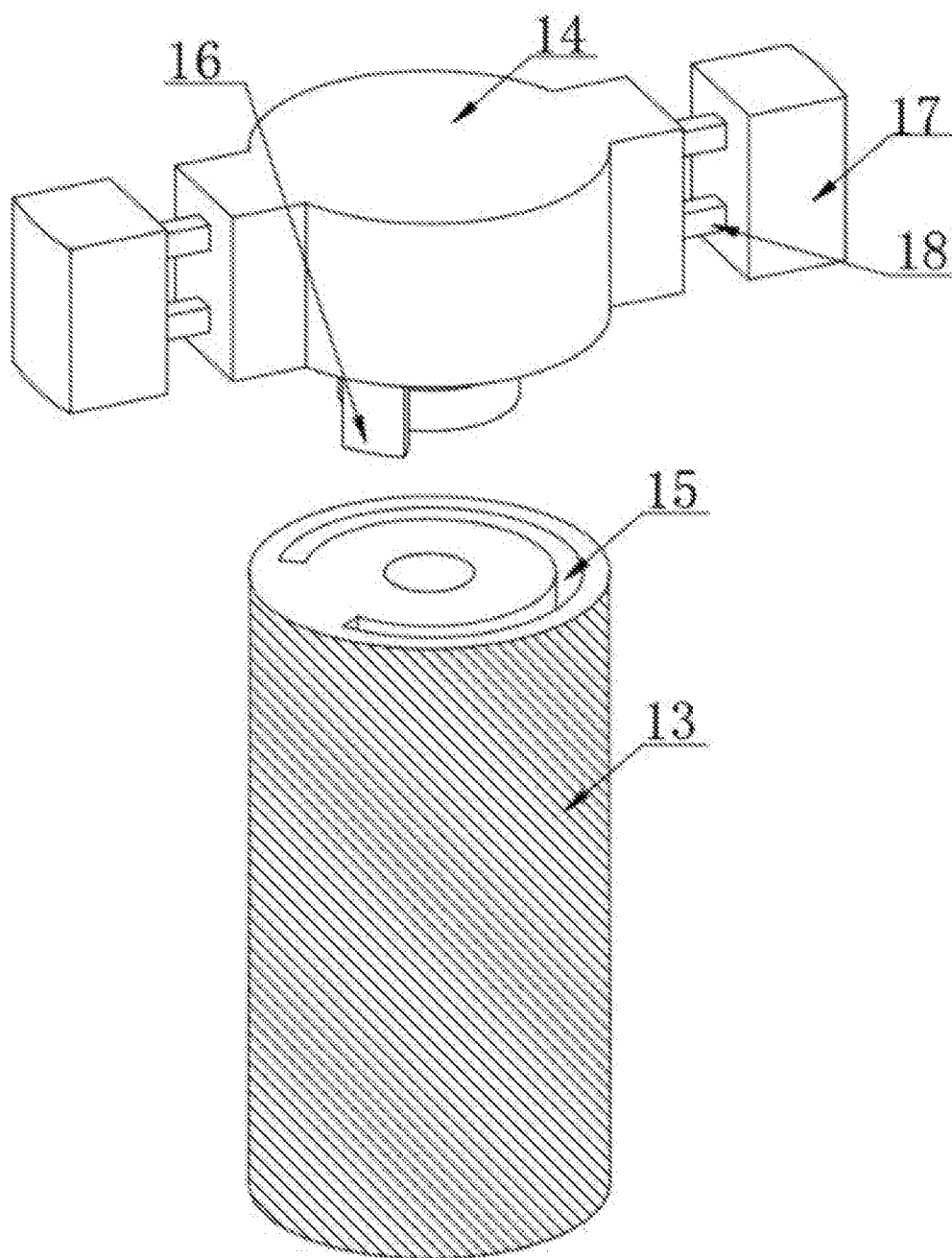


FIG. 5

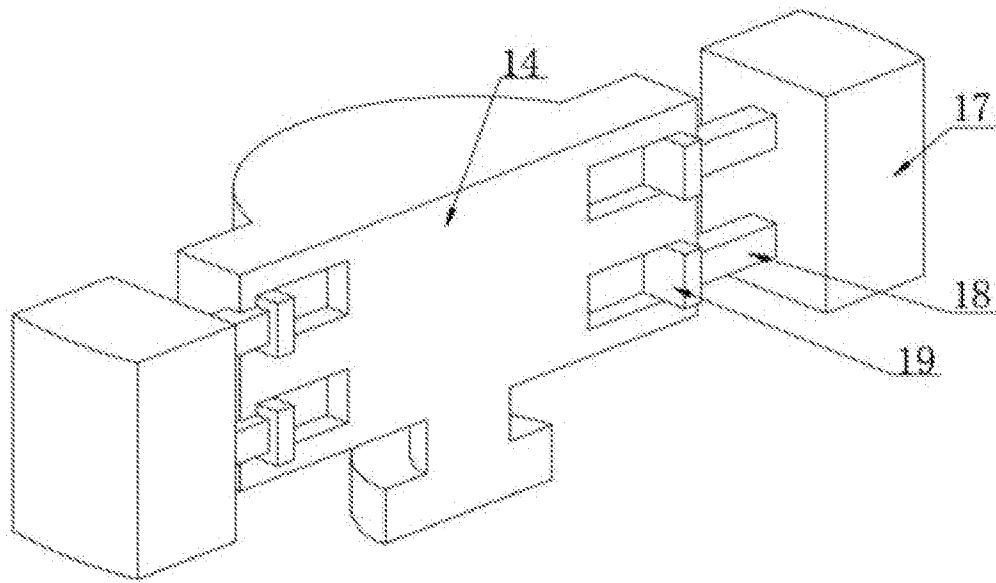


FIG. 6

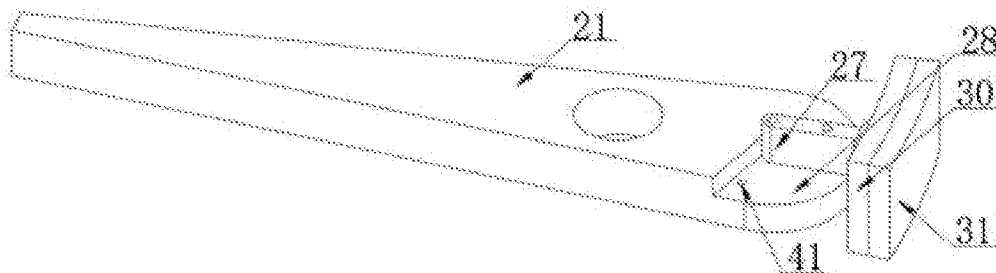


FIG. 7

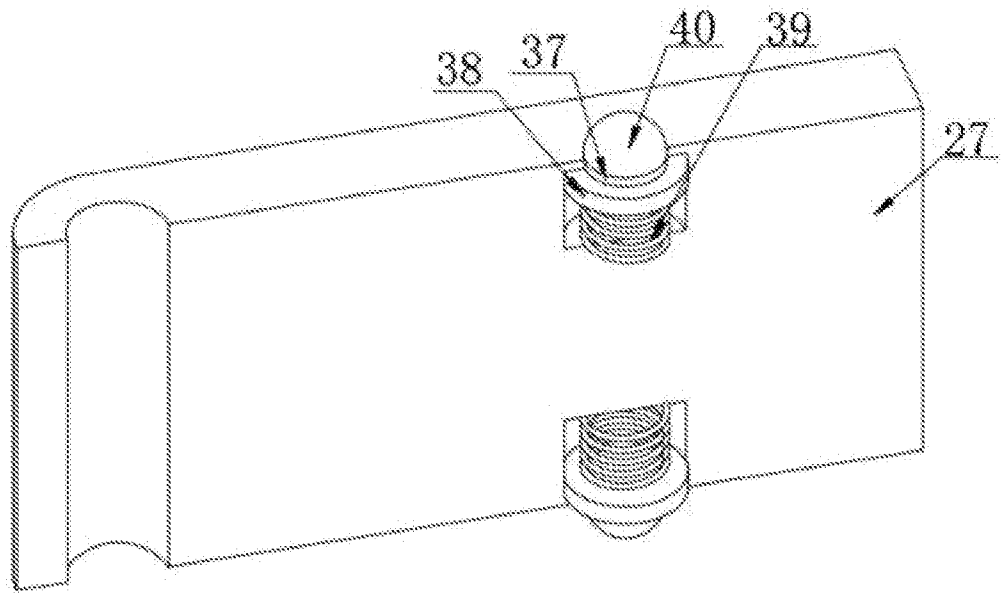


FIG. 8

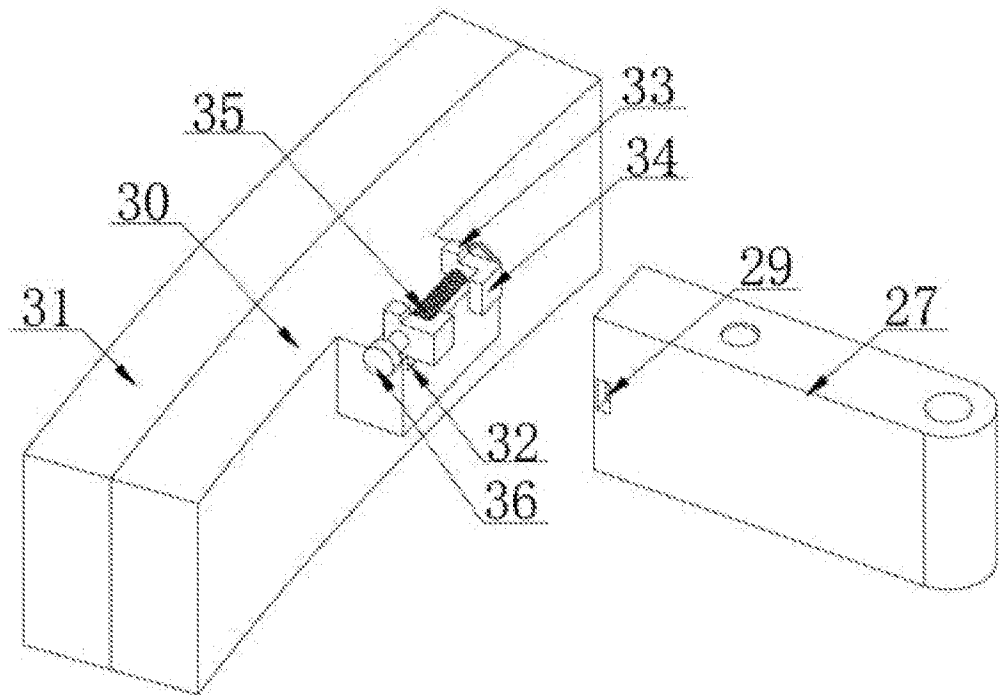
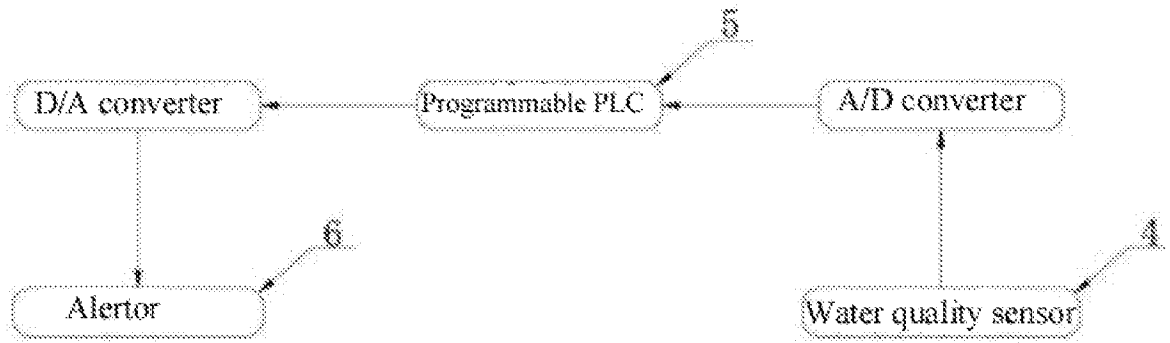


FIG. 9

**FIG. 10**



ONDERZOEKSRAPPORT

BETREFFENDE HET RESULTAAT VAN HET ONDERZOEK NAAR DE STAND VAN DE TECHNIEK

RELEVANTE LITERATUUR			
Categorie ¹	Literatuur met, voor zover nodig, aanduiding van speciaal van belang zijnde tekstgedeelten of figuren.	Van belang voor conclusie(s) nr:	Classificatie(IPC)
X	CN 112 551 653 A (SHANDONG XINGLIAN INFORMATION TECH CO LTD) 26 maart 2021 (2021-03-26)	1, 6, 7	INV. G01N33/18
Y	* samenvatting * * figuren 1-6 *	2	
Y	US 2017/307580 A1 (KIM TAE YONG [KR] ET AL) 26 oktober 2017 (2017-10-26) * alinea's [0002], [0033], [0063], [0067] - [0073] * * figuren 1,5 *	2	
A	US 2014/273052 A1 (REDDY RAKESH [US] ET AL) 18 september 2014 (2014-09-18) * alinea's [0003] - [0005], [0067] - [0070], [0074], [0077], [0102] - [0104] * * figuren 1-3,10,11 *	1-10	
A	US 10 338 631 B1 (JORDEN ROGER M [US] ET AL) 2 juli 2019 (2019-07-02) * kolom 1, regels 5-15 * * kolom 5, regels 59-62 * * kolom 15, regels 7-16 * * kolom 23, regels 48-62 * * figuren 1,20,21 *	1-10	Onderzochte gebieden van de techniek G01N E04H
Indien gewijzigde conclusies zijn ingediend, heeft dit rapport betrekking op de conclusies ingediend op:			
Plaats van onderzoek: 's-Gravenhage		Datum waarop het onderzoek werd voltooid: 15 mei 2023	Bevoegd ambtenaar: Couteau, Olivier

¹ NDERLINCATEGORIE VAN DE VERMELDE LITERATUUR

X: de conclusie wordt als niet nieuw of niet inventief beschouwd ten opzichte van deze literatuur
Y: de conclusie wordt als niet inventief beschouwd ten opzichte van de combinatie van deze literatuur met andere geciteerde literatuur van dezelfde categorie, waarbij de combinatie voor de vakman voor de hand liggend wordt geacht
A: niet tot de categorie X of Y behorende literatuur die de stand van de techniek beschrijft
O: niet-schriftelijke stand van de techniek
P: tussen de voorrangsdatum en de indieningsdatum gepubliceerde literatuur

T: na de indieningsdatum of de voorrangsdatum gepubliceerde literatuur die niet bezwarend is voor de octrooiaanvraag, maar wordt vermeld ter verheldering van de theorie of het principe dat ten grondslag ligt aan de uitvinding
E: eerdere octrooi(aanvraag), gepubliceerd op of na de indieningsdatum, waarin dezelfde uitvinding wordt beschreven
D: in de octrooiaanvraag vermeld
L: om andere redenen vermelde literatuur
&: lid van dezelfde octrooifamilie of overeenkomstige octrooipublicatie

**AANHANGSEL BEHORENDE BIJ HET RAPPORT BETREFFENDE
HET ONDERZOEK NAAR DE STAND VAN DE TECHNIEK,
UITGEVOERD IN DE OCTROOIAANVRAGE NR.**

**NO 142621
NL 2033426**

Het aanhangsel bevat een opgave van elders gepubliceerde octrooiaanvragen of octrooien (zogenaamde leden van dezelfde octrooifamilie), die overeenkomen met octrooischriften genoemd in het rapport.

De opgave is samengesteld aan de hand van gegevens uit het computerbestand van het Europees Octrooibureau per

De juistheid en volledigheid van deze opgave wordt noch door het Europees Octrooibureau, noch door het Bureau voor de Industriële eigendom gegarandeerd;; de gegevens worden verstrekt voor informatiedoeleinden.

15-05-2023

In het rapport genoemd octrooigeschrift	Datum van publicatie	Overeenkomend(e) geschrift(en)	Datum van publicatie
CN 112551653 A	26-03-2021	GEEN	
US 2017307580 A1	26-10-2017	KR 20180101086 A	12-09-2018
		US 2017307580 A1	26-10-2017
US 2014273052 A1	18-09-2014	GEEN	
US 10338631 B1	02-07-2019	GEEN	

SCHRIFTELIJKE OPINIE

DOSSIER NUMMER NO142621	INDIENINGSDATUM 31.10.2022	VOORRANGSDATUM 10.11.2021	AANVRAAGNUMMER NL2033426
CLASSIFICATIE INV. G01N33/18			
AANVRAGER Jiangxi Wotai Environmental Protection Technology Co., Ltd.			

Deze schriftelijke opinie bevat een toelichting op de volgende onderdelen:

- ☒ Onderdeel I Basis van de schriftelijke opinie
- ☐ Onderdeel II Voorrang
- ☐ Onderdeel III Vaststelling nieuwheid, inventiviteit en industriële toepasbaarheid niet mogelijk
- ☐ Onderdeel IV De aanvraag heeft betrekking op meer dan één uitvinding
- ☒ Onderdeel V Gemotiveerde verklaring ten aanzien van nieuwheid, inventiviteit en industriële toepasbaarheid
- ☐ Onderdeel VI Andere geciteerde documenten
- ☒ Onderdeel VII Overige gebreken
- ☐ Onderdeel VIII Overige opmerkingen

	DE BEVOEGDE AMBTENAAR Couteau, Olivier
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Onderdeel I Basis van de Schriftelijke Opinie

1. Deze schriftelijke opinie is opgesteld op basis van de meest recente conclusies ingediend voor aanvang van het onderzoek.
2. Deze motivering is opgesteld, met betrekking tot **nucleotide- en/of aminozuursequenties** die genoemd worden in de aanvraag, op basis van een sequentielijst die:
 - a. ☐ is opgenomen in de aanvraag zoals deze oorspronkelijk is ingediend
 - b. ☐ aangeleverd is na de indieningsdatum ten behoeve van het onderzoek
 - ☐ en vergezeld ging van een verklaring dat de sequentielijst niet meer informatie bevat dan de aanvraag zoals deze oorspronkelijk is ingediend.
3. ☐ Deze motivering is opgesteld, met betrekking tot nucleotide- en/of aminozuursequenties die genoemd worden in de aanvraag, voor zover een zinvolle motivering gevormd kon worden zonder een sequentielijst die voldeed aan WIPO standaard ST.26.
4. Overige opmerkingen:

Onderdeel V Gemotiveerde verklaring ten aanzien van nieuwheid, inventiviteit en industriële toepasbaarheid

1. Verklaring

Nieuwheid	Ja: Conclusies 1-10 Nee: Conclusies
Inventiviteit	Ja: Conclusies 3-5, 8-10 Nee: Conclusies 1, 2, 6, 7
Industriële toepasbaarheid	Ja: Conclusies 1-10 Nee: Conclusies

2. Citaties en toelichting:

Zie aparte bladzijde

Onderdeel VII Overige gebreken

De volgende gebreken in de vorm of inhoud van de aanvraag zijn opgemerkt:

Zie aparte bladzijde

Re item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

- D1 CN 112 551 653 A (SHANDONG XINGLIAN INFORMATION TECH CO LTD) 26 maart 2021
- D2 US 2017/307580 A1 (KIM TAE YONG [KR] ET AL) 26 oktober 2017
- D3 US 2014/273052 A1 (REDDY RAKESH [US] ET AL) 18 september 2014
- D4 US 10 338 631 B1 (JORDEN ROGER M [US] ET AL) 2 juli 2019

1 INDEPENDENT CLAIM

1.1 Document D1 discloses (the references in parentheses applying to the machine translation annexed to the search report):

a real-time water quality monitoring device of a water purifier (such as monitoring water quality after sewage water treatment, see [0002], [0041], [0043], [0044] and the device illustrated in fig. 1), including:

- a machine body (2), wherein two sides of the machine body are fixedly connected with a water inlet pipe (7) and a water outlet pipe (8), an outside of the water inlet pipe and an outside of the water outlet pipe are fixedly connected with switching valves (such as solenoid valves 71 and 81), and an inner cavity of the machine body is provided with a detection mechanism (see the water quality sensor 25 as shown in fig. 4); and
- a middle of an inner wall of the machine body has a placement slot, a water quality sensor (25) is arranged inside the placement slot, and the water quality sensor is arranged inside the placement slot and is movably sleeved with an inner wall of the machine body (see again the water quality sensor 25 as shown in fig. 4).

1.2 The subject-matter of claim 1 is therefore new and differs from the known document D1 in that:

one side of an outer wall of the machine body is fixedly connected with a programmable PLC, and the other side of the outer wall of the machine body is fixedly connected with a supporting plate, a top of the supporting plate is fixedly

connected with an alertor, and the water quality sensor is electrically connected with the programmable PLC through an A/D converter, the programmable PLC is electrically connected with the alertor through a D/A converter.

- 1.3 However, these features are very commonly used in the field of water quality monitoring. For instance, the water quality monitoring devices of documents D2 and D4 produce alerts (see [0063] of D2 and col. 15 l. 7-16 of D4) while document D3 illustrates the use of programmable logic controllers (such as the programmable controller 165 attached to the outer wall of pipe body 100, see [0070]-[0071] and fig. 2).
- 1.4 As a consequence, the subject-matter of claim 1 cannot be considered as involving an inventive step.

2 DEPENDENT CLAIMS

- 2.1 Dependent claims 2, 6 and 7 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of patentability in respect of inventive step, the reasons being as follows:
- 2.2 claim 2: combining ring, groove and sealing gasket components for preventing leaking is commonly known for water quality monitoring devices (see, for instance, the device of document D2 which uses a ring 501, a groove and a gasket 507 as shown in fig. 5B, see [0067]-[0073] as well).
- 2.3 claims 6 and 7: document D1 discloses a mixing component for homogenising the water sample having a plurality of mixing rods (243) and limiting rods (244) distributed in a circular array and including a motor (23, see [0044] and figs. 4 and 6).
- 2.4 The combination of the features of dependent claims 3-5 and 8-10 is neither known from, nor rendered obvious by, the available prior art.

Re Item VII

Certain defects in the international application

- 3 The relevant background art disclosed in documents D1 and D2 is not mentioned in the description, nor are these documents identified therein.