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DESCRIPTION CN218680129U

An automated device for cultivating duckweed

一种自动化养殖浮萍的装置

[0001]

Technical Field

技术领域

[n0001]

This utility model relates to the technical field of automated duckweed cultivation devices, and in particular to an automated duckweed cultivation device.

本实用新型涉及自动化养殖浮萍装置技术领域，尤其涉及一种自动化养殖浮萍的装置。

[0003]

Background Technology

背景技术

[n0002]

Duckweed is an aquatic vascular plant belonging to the Lemnaceae family. It is widely distributed throughout the world and is a good feed for pigs, ducks, and grass carp. It has a good capacity for absorbing nitrogen and phosphorus and has always been a pioneer plant for water purification. However, if a large number of individuals that reproduce in the water are not removed in time, they will cause secondary pollution of the water due to decay.

浮萍是浮萍科水生维管束植物，广泛分布于世界各地，是良好的猪饲料、鸭饲料，也是草鱼的饵料，具有良好的氮、磷吸收能力，一直以来它都是水体净化的先锋植物，如果不能及时清除水体中大量繁殖的个体，它也会因腐烂而造成水体的二次污染。

[n0003]

Duckweed is small and difficult to harvest. It is impossible to gather duckweed together for harvesting. The harvesting and processing process is time-consuming and labor-intensive. At the same time, the harvesting device is not easy to disassemble and clean, and the operation is troublesome and inconvenient to use.

浮萍个体微小，不易打捞，不能将浮萍聚集到一起进行打捞，打捞和处理过程中费时费力，同时打捞的装置不易拆卸清理，操作麻烦，不方便使用。

[0006]

Utility Model Content

实用新型内容

[n0004]

The purpose of this invention is to address the shortcomings of existing technologies by proposing an automated device for cultivating duckweed.

本实用新型的目的是为了解决现有技术中存在的缺点，而提出的一种自动化养殖浮萍的装置。

[n0005]

To achieve the above objectives, this utility model adopts the following technical solution: an automated duckweed cultivation device, comprising a main body, a water pump fixedly connected inside the main body, a drain pipe fixedly connected to the front side of the water pump, a wide-mouth nozzle fixedly connected to the front end of the drain pipe, a first electric push rod fixedly connected to the top of the main body, a support block fixedly connected to the top of the first electric push rod, a control panel fixedly connected to the top of the support block, a rotating shaft rotatably connected to the middle of both sides of the support block, a connecting block fixedly connected to the middle of both sides of the rotating shaft, a limit frame fixedly connected to the top of each connecting block, a slide rail fixedly connected to the bottom wall of each limit frame, a second electric push rod fixedly connected to the rear side of each limit frame, a slider slidably connected to the outer wall of each slide rail, a slider 2 fixedly connected to the front side of the slider 1 adjacent to each slider 2, and a drying board slidably connected to the outer wall of each slider 2.

为了实现上述目的，本实用新型采用了如下技术方案：一种自动化养殖浮萍的装置，包括主体，所述主体内部固定连接有抽水泵，所述抽水泵前侧固定连接有排水管，所述排水管前端固定连接有广口器，所述主体顶部固定连接有第一电动推杆，所述第一电动推杆顶部固定连接有支撑块，所述支撑块顶部固定连接有控制面板，所述支撑块两侧中部均转动连接有转轴一，所述转轴一两侧中部均固定连接有限位框，所述限位框内底壁均固定连接有滑轨，所述限位框后侧均固定连接有第二电动推杆，所述滑轨外壁均滑动连接有滑块一，所述滑块一相靠近一侧前侧均固定连接有限位框，所述限位框外壁均滑动连接有限位板。

[n0006]

As a further description of the above technical solution:

作为上述技术方案的进一步描述：

[n0007]

The main body is fixedly connected to four pillars at its bottom corners.

所述主体底部四角均固定连接有支柱。

[n0008]

As a further description of the above technical solution:

作为上述技术方案的进一步描述：

[n0009]

Limiting plates are fixedly connected to the bottom of both sides of the support block, and the limiting plates are located directly below the limiting frame.

所述支撑块两侧底部均固定连接有限位板，所述限位板均位于限位框正下方。

[n0010]

As a further description of the above technical solution:

作为上述技术方案的进一步描述：

[n0011]

Each of the second electric push rods has a slider fixedly connected to its front end, and the outer wall of each of the second electric push rods is provided with a waterproof layer.

所述第二电动推杆前端均固定连接滑块一，所述第二电动推杆外壁均设置有防水层。

[n0012]

As a further description of the above technical solution:

作为上述技术方案的进一步描述：

[n0013]

A handle is fixedly connected to the front side of the drying board.

所述晾晒板前侧固定连接有把手。

[n0014]

As a further description of the above technical solution:

作为上述技术方案的进一步描述：

[n0015]

Both sides of the slider one are fixedly connected to the rear side of the fixed block, and the rear side of the fixed block is rotatably connected to the rotating shaft two. The outer wall of the rotating shaft two is fixedly connected to the side close to each other, and the top of the rotating shaft two is provided with a knob.

两侧所述滑块一后侧均固定连接有固定块，所述固定块后侧均转动连接有转轴二，所述转轴二外壁相靠近一侧均固定连接有限位块，所述转轴二顶部均设置有旋钮。

[n0016]

As a further description of the above technical solution:

作为上述技术方案的进一步描述：

[n0017]

The drying board is made of stainless steel.

所述晾晒板为不锈钢材质。

[n0018]

As a further description of the above technical solution:

作为上述技术方案的进一步描述：

[n0019]

The control panel is electrically connected to a water pump, a first electric actuator, and a second electric actuator.

所述控制面板电性连接有抽水泵、第一电动推杆和第二电动推杆。

[n0020]

This utility model has the following beneficial effects:

本实用新型具有如下有益效果：

[n0021]

1. In this utility model, water is pumped out by the pump inside the main body, causing the water in the river to flow and forming a local circulation on the water surface. The wide mouthpiece on the drain pipe can better expand the water inlet surface and increase the

water flow area. The net in front of the wide mouthpiece can successfully intercept duckweed in front of the pump 3, achieving the accumulation of duckweed. At this time, the rotating shaft on the support block drives the limiting frame downward. When a certain angle is reached, the second electric push rod drives the drying plate downward to scoop up the duckweed. The scooping effect is good, saving time and effort, and is easy to operate.

1、本实用新型中，通过在主体内的抽水泵抽水，使河道里的水流动起来，使水面形成一个局部的循环且在排水管上的广口器可以更好地扩大进水面，增加水面流动面积，且广口器前面的拦网，可以将浮萍成功地拦截在抽水泵3的前面，实现浮萍的堆积，此时支撑块上的转轴一带动限位框向下，达到一定角度时，利用第二电动推杆带动晾晒板向下对浮萍进行打捞，打捞效果好，省时省力，便于操作。

[n0022]

2. In this utility model, by setting a handle on the front side of the drying board, it is convenient for workers to pull the drying board, which saves effort and is easy to use. The drying board can be moved by the two sliders on both sides to facilitate disassembly and cleaning. When the drying board is submerged below the water surface, the knob on the rotating shaft can be turned to fix and limit the drying board.

2、本实用新型中，通过在晾晒板前侧设置把手，方便工作人员拉动晾晒板，省力便于使用，且晾晒板可以通过两侧的滑块二进行移动达到便于拆卸清洗的目的，且当晾晒板沉没至水面之下时，转动转轴二上的旋钮达到对晾晒板进行固定限位的目的。

[0026]

Attached Figure Description

附图说明

[n0023]

Figure 1 is a side perspective view of an automated duckweed cultivation device proposed in this utility model;

图1为本实用新型提出的一种自动化养殖浮萍的装置的侧视立体图；

[n0024]

Figure 2 is a rear perspective sectional view of an automated duckweed cultivation device proposed in this utility model;

图2为本实用新型提出的一种自动化养殖浮萍的装置的后视立体剖视图；

[n0025]

Figure 3 is a front perspective sectional view of an automated duckweed cultivation device proposed in this utility model.

图3为本实用新型提出的一种自动化养殖浮萍的装置的主视立体剖视图。

[n0026]

Legend:

图例说明：

[n0027]

1. Main body; 2. Support column; 3. Water pump; 4. Drain pipe; 5. Wide-mouth nozzle; 6. First electric push rod; 7. Support block; 8. Limiting plate; 9. Control panel; 10. Rotating shaft one; 11. Connecting block; 12. Limiting frame; 13. Slide rail; 14. Second electric push rod; 15. Slider one; 16. Drying board; 17. Slider two; 18. Limiting block; 19. Knob; 20. Handle; 21. Fixing block; 22. Rotating shaft two.

1、主体；2、支柱；3、抽水泵；4、排水管；5、广口器；6、第一电动推杆；7、支撑块；8、限位板；9、控制面板；10、转轴一；11、连接块；12、限位框；13、滑轨；14、第二电动推杆；15、滑块一；16、晾晒板；17、滑块二；18、限位块；19、旋钮；20、把手；21、固定块；22、转轴二。

[0032]

Detailed Implementation

具体实施方式

[n0028]

The technical solutions of the present utility model will be clearly and completely described below with reference to the accompanying drawings of the embodiments of the present utility model. Obviously, the described embodiments are only some embodiments of the present utility model, and not all embodiments.

下面将结合本实用新型实施例中的附图，对本实用新型实施例中的技术方案进行清楚、完整地描述，显然，所描述的实施例仅仅是本实用新型一部分实施例，而不是全部的实施例。

Based on the embodiments of this utility model, all other embodiments obtained by those skilled in the art without creative effort are within the scope of protection of this utility model.

基于本实用新型中的实施例，本领域普通技术人员在没有做出创造性劳动前提下所获得的所有其他实施例，都属于本实用新型保护的范围。

[n0029]

In the description of this utility model, it should be noted that the terms "center," "upper," "lower," "left," "right," "vertical," "horizontal," "inner," and "outer," etc., indicate the orientation or positional relationship based on the orientation or positional relationship shown in the accompanying drawings. They are only for the convenience of describing this utility model and simplifying the description, and do not indicate or imply that the device or element referred to must have a specific orientation, or be constructed and operated in a specific orientation. Therefore, they should not be construed as limitations on this utility model. The terms "first," "second," and "third" are used for descriptive purposes only and should not be construed as indicating or implying relative importance. In addition, unless otherwise explicitly specified and limited, the terms "installed," "connected," and "linked" should be interpreted broadly. For example, they can be fixed connections, detachable connections, or integral connections; they can be mechanical connections or electrical connections; they can be direct connections or indirect connections through an intermediate medium; and they can be internal connections between two elements.

在本实用新型的描述中，需要说明的是，术语“中心”、“上”、“下”、“左”、“右”、“竖直”、“水平”、“内”、“外”等指示的方位或位置关系为基于附图所示的方位或位置关系，仅是为了便于描述本实用新型和简化描述，而不是指示或暗示所指的装置或元件必须具有特定的方位、以特定的方位构造和操作，因此不能理解为对本实用新型的限制；术语“第一”、“第二”、“第三”仅用于描述目的，而不能理解为指示或暗示相对重要性，此外，除非另有明确的规定和限定，术语“安装”、“相连”、“连接”应做广义理解，例如，可以是固定连接，也可以是可拆卸连接，或一体地连接；可以是机械连接，也可以是电连接；可以是直接相连，也可以通过中间媒介间接相连，可以是两个元件内部的连通。

Those skilled in the art can understand the specific meaning of the above terms in this utility model according to the specific circumstances.

对于本领域的普通技术人员而言，可以具体情况理解上述术语在本实用新型中的具体含义。

[n0030]

Referring to Figures 1-3, one embodiment of this utility model provides an automated duckweed cultivation device, comprising a main body 1. A water pump 3 is fixedly connected inside the main body 1. A drain pipe 4 is fixedly connected to the front side of the water pump 3. The drain pipe 4 is installed on the outlet of the water pump 3 to circulate and discharge water back into the original water body, causing the water in the river to flow and forming a local circulation on the water surface. A wide-mouth device 5 is fixedly connected to the front

end of the drain pipe 4, which better expands the water inlet surface and increases the water surface flow area. A net is installed in front of the wide-mouth device 5 to successfully intercept duckweed in front of the water pump 3, achieving duckweed accumulation. A first electric push rod 6 is fixedly connected to the top of the main body 1 for easy adjustment of the overall height. A support block 7 is fixedly connected to the top of the first electric push rod 6, and a control panel is fixedly connected to the top of the support block 7. 9. A pivot 10 is rotatably connected to the middle of both sides of the support block 7. A connecting block 11 is fixedly connected to the middle of both sides of the pivot 10. A limit frame 12 is fixedly connected to the top of the connecting block 11. A slide rail 13 is fixedly connected to the bottom wall of the limit frame 12. A second electric push rod 14 is fixedly connected to the rear side of the limit frame 12. A slider 15 is slidably connected to the outer wall of the slide rail 13. A slider 2 17 is fixedly connected to the front side of the slider 15 on the side closest to the slider 15. A drying board 16 is slidably connected to the outer wall of the slider 2 17. The pivot 10 drives the limit frame 12 downward. When it reaches a certain angle, the second electric push rod 14 drives the drying board 16 downward to retrieve the duckweed, so that the drying board 16 sinks below the water surface. When it floats to the surface again, the drying board 16 is pushed to the top by the second electric push rod 14. The operation is convenient and easy to use.

参照图1-3，本实用新型提供一种实施例：一种自动化养殖浮萍的装置，包括主体1，主体1内部固定连接有抽水泵3，抽水泵3前侧固定连接有排水管4，抽水泵3的出水口上安装排水管4将水循环排放回到原来的水体中，使河道里的水流动起来，使水面形成一个局部的循环，排水管4前端固定连接有广口器5，广口器5更好地扩大进水面，增加水面流动面积，在广口器5的前面安装有一个拦网，可以将浮萍成功地拦截在抽水泵3的前面，实现浮萍的堆积，主体1顶部固定连接有第一电动推杆6，便于调节整体高度，第一电动推杆6顶部固定连接有支撑块7，支撑块7顶部固定连接有控制面板9，支撑块7两侧中部均转动连接有转轴一10，转轴一10两侧中部均固定连接有连接块11，连接块11顶部均固定连接有有限位框12，限位框12内底壁均固定连接有滑轨13，限位框12后侧均固定连接有第二电动推杆14，滑轨13外壁均滑动连接有滑块一15，滑块一15相靠近一侧前侧均固定连接有滑块二17，滑块二17外壁均滑动连接有晾晒板16，转轴一10带动限位框12向下，达到一定角度时，利用第二电动推杆14带动晾晒板16向下对浮萍进行打捞，使晾晒板16沉没在水面之下，待再次浮出水面时，将晾晒板16通过第二电动推杆14推至顶部，操作方便，便于使用。

[n0031]

The main body 1 has four fixed support pillars 2 at its bottom corners for easy fixation, ensuring stable standing during operation. Limiting plates 8 are fixedly connected to the bottom sides of the contact support block 7 to limit the downward movement of the limiting frame 12. The limiting plates 8 are located directly below the limiting frame 12. A slider 15 is fixedly connected to the front end of the second electric push rod 14, driving the sliders 15 on both sides of the drying board 16 forward. The outer wall of the second electric push rod 14 is protected by a waterproof layer. A handle 20 is fixedly connected to the front of the drying

board 16 for convenient operation. The drying board 16 is easy to use and requires minimal effort to pull. It can be disassembled for cleaning via two side sliders 17. Each side slider 15 has a fixed block 21 at its rear. Each fixed block 21 has a rotating shaft 22 at its rear. Each rotating shaft 22 has a limit block 18 fixedly connected to the outer wall of the rotating shaft 22. When the drying board 16 is submerged below the water surface, each rotating shaft 22 has a knob 19 at its top. The knob 19 is used to fix and limit the drying board 16. The drying board 16 is made of stainless steel. The control panel 9 is electrically connected to a water pump 3, a first electric push rod 6, and a second electric push rod 14.

主体1底部四角均固定连接有支柱2，便于固定主体1，使主体1在工作时能稳定的站立地面，保持稳定性，接触支撑块7两侧底部均固定连接有限位板8，对限位框12向下时进行限位，限位板8均位于限位框12正下方，第二电动推杆14前端均固定连接有滑块一15，第二电动推杆14带动晾晒板16两侧的滑块一15向前，第二电动推杆14外壁均设置有防水层，对第二电动推杆14进行保护，晾晒板16前侧固定连接有把手20，方便工作人员拉动晾晒板16，省力便于使用，且晾晒板16可以通过两侧滑块二17进行拆卸来清洗，两侧滑块一15后侧均固定连接有固定块21，固定块21后侧均转动连接有转轴二22，转轴二22外壁相靠近一侧均固定连接有限位块18，当晾晒板16沉没至水面之下时，转轴二22顶部均设置有旋钮19，通过旋钮19对晾晒板16进行固定限位，晾晒板16为不锈钢材质，控制面板9电性连接有抽水泵3、第一电动推杆6和第二电动推杆14。

[n0032]

Working Principle: When using the automated duckweed aquaculture device, firstly, the four support pillars 2 at the bottom of the main body 1 are inserted into the water. Water is pumped out by a water pump 3. The drain pipe 4 on the water pump 3 is connected to a wide-mouth device 5. The drain pipe 4 installed at the outlet of the water pump 3 circulates the water back into the original water body, causing the water in the river to flow and forming a local circulation on the water surface. A net is installed in front of the wide-mouth device 5, which can successfully intercept the duckweed in front of the water pump 3, achieving the accumulation of duckweed. At the same time, the rotating shafts 10 on both sides of the support block 7 drive the limiting frame 12 downward, achieving a... At a fixed angle, the second electric push rod 14 is used to drive the drying board 16 downwards to scoop up the duckweed, causing the drying board 16 to sink below the water surface. When it floats to the surface again, the drying board 16 is pushed to the top by the second electric push rod 14. Then, the staff removes the drying board 16 with the handle 20 to dry the duckweed. The drying board 16 is rectangular and made of stainless steel to prevent rust and increase its service life. It also has a grid-like mesh on the surface to better attach the duckweed. A wide-mouth device 5 is installed at the inlet of the water pump 3 to better expand the water inlet surface and increase the water flow area.

工作原理：当我们在使用自动化养殖浮萍装置时，首先将主体1底部的四个支柱2插入水里，通过抽水泵3抽水，抽水泵3上的排水管4连接广口器5，抽水泵3的出水口上安装排水管4将水循环排放回到

原来的水体中，使河道里的水流动起来，使水面形成一个局部的循环，在广口器5的前面安装有一个拦网，可以将浮萍成功地拦截在抽水泵3的前面，实现浮萍的堆积，同时支撑块7两侧的转轴—10带动限位框12向下，达到一定角度时，利用第二电动推杆14带动晾晒板16向下对浮萍进行打捞，使晾晒板16沉没在水面之下，待再次浮出水面时，将晾晒板16通过第二电动推杆14推至顶部，随后工作人员通过把手20取下晾晒板16对浮萍进行晾晒，晾晒板16为长方形，采用不锈钢材质以防生锈且增加其使用寿命，而且在表面设置有格状纱网，以便更好地附着浮萍，抽水泵3的入口处安装一个广口器5，更好地扩大进水面，增加水面流动面积。

[n0033]

Finally, it should be noted that the above description is only a preferred embodiment of the present utility model and is not intended to limit the present utility model. Although the present utility model has been described in detail with reference to the foregoing embodiments, those skilled in the art can still modify the technical solutions described in the foregoing embodiments or make equivalent substitutions for some of the technical features. Any modifications, equivalent substitutions, improvements, etc., made within the spirit and principles of the present utility model should be included within the protection scope of the present utility model.

最后应说明的是：以上所述仅为本实用新型的优选实施例而已，并不用于限制本实用新型，尽管参照前述实施例对本实用新型进行了详细的说明，对于本领域的技术人员来说，其依然可以对前述各实施

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