AN INCLINED CURTAIN WALL CLEANING ROBOT

FIELD OF THE INVENTION

The invention relates to the technical field of robots, in particular to a slope curtain wall cleaning robot.

BACKGROUND OF THE INVENTION

Robots have basic characteristics such as perception, decision-making, and execution. They can assist or even replace humans in completing dangerous, heavy, and complex tasks, improve work efficiency and quality, serve human life, and expand or extend the scope of human activities and capabilities.

However, most of the wall cleaning robots on the market cannot clean inclined surfaces, and they need to be pressed against the glass curtain wall during cleaning without causing damage to the glass curtain wall, which leads to the single function of the cleaning robot and low practicability.

Therefore, there are deficiencies in the prior art and need to be improved.

SUMMARY OF THE INVENTION

In order to overcome the above technical problems, the present invention provides an inclined curtain wall cleaning robot.

The solution of the present invention to solve the technical problem is to provide an inclined curtain wall cleaning robot, comprising a cleaning rack, wherein an outer side of the cleaning rack is rotatably connected with a balancing bracket, an inner side of the balancing bracket is provided with a balancing counterweight, and wherein an inner side of the cleaning rack is provided with a fixed rack, and both sides of the cleaning rack are provided with supportsl a main cleaning spinner, arranged on top of the supports; inflatable wheels, arranged in both sides of the cleaning rack; a drive motor, fixed with abottom end of the fixed rack , a driving end of the drive motor is connected to the main cleaning spinner through a transmission belt, and a two ends of the main cleaning spinner are provided with side cleaning brushes.

Furthermore, both sides of the cleaning rack are provided with several small holes.

Furthermore, the inner sides of the balancing bracket are provided with connecting rods for adjusting the ballast angle.

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Furthermore, the top of the cleaning rack is provided with a suspension bracket, and the top of the suspension bracket is provided with a traction rope.

Furthermore, one side of the suspension bracket is provided with a propeller cover, and the inner side of the propeller cover is provided with a propeller for adjusting the suspension.

Furthermore, a compressed spring guide rod is slid on one side of the fixed rack, and a spring is arranged on the outer side of the compressed spring guide rod.

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Furthermore, the compression spring guide rod is rotatably connected to one side of the bracket.

Furthermore, the diameter of the main cleaning spinner is set to 100-150cm.

Compared with the prior art, the inclined curtain wall cleaning robot of the present invention has the following advantages:

By the balancing counterweight set on one side of the balancing bracket, the transformer or other controls can be placed inside the balancing counterweight, so that it can form a balance weight with the main cleaning spinner, and the connecting rod for adjusting the weight angle is connected to both sides of the cleaning rack, and there are several round holes set on both sides of the cleaning rack. After adjusting the angle of the cleaning rack and the balancing bracket, the angle between the cleaning rack and the balancing bracket is fixed by the connecting rod. Then the main cleaning spinner can start to work and achieve a balance to facilitate the cleaning of the inclined wall.

By setting the main cleaning spinner and inflatable wheels on both sides of the cleaning rack, the inflatable wheels contact with the wall. And because the inflatable wheels use the wheels in inflatable mode, they will not cause damage to the wall. The main cleaning spinner is pressed against the wall for convenient cleaning the wall. There are side cleaning brushes on both sides of the main cleaning spinner. The side cleaning brushes can clean the right angle of the wall. The fixed rack is fixed on the opposite inner side of the main cleaning spinner. One side of the fixed rack is provided with a compression spring guide rod, and the outer side of the compression spring guide rod is provided with a spring, the pressure of the main cleaning spinner against the glass curtain wall is adjusted by the compression spring guide rod and the spring. When cleaning the

inclined curtain wall, shorten to lean back the balancing counterweight and adjust its position to the back of the inflatable wheels to form a balanced state, which is convenient for achieving the effect of the inclined wall cleaning.

The suspension bracket is set on top of the main cleaning spinner, the adjusting propeller is set on one side of the suspension bracket, and a traction rope is set on top of the suspension bracket. The robot can be pulled by the traction rope so that it can move up and down along the surface of the glass curtain wall and can move laterally to clean the glass curtain wall. Because the inflatable wheels are inflatable tires, the robot will not cause damage to the glass curtain wall when it moves laterally. The bottom of the main cleaning spinner is provided with a driving motor, and the driving end of the driving motor is connected with the outer drive of the main cleaning spinner through a transmission belt so that it can achieve the cleaning effect on the inclined wall.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a three-dimensional structural schematic diagram of the inclined curtain wall cleaning robot of the present invention.

Fig. 2 is a front structural schematic diagram of the inclined curtain wall cleaning robot of the present invention.

Fig. 3 is a schematic diagram of the left and right axonometric three-dimensional structure of the inclined curtain wall cleaning robot of the present invention.

Fig. 4 is a schematic diagram of the upper and lower axonometric three-dimensional structure of the inclined curtain wall cleaning robot of the present invention.

Explanation of reference labels:

The main cleaning spinner 1, the side cleaning brushes 2, the inflatable wheels 3, the compression spring guide rod 4, the fixed rack 5, the driving motor 6, the balancing counterweight 7, the connecting rods for adjusting the ballast angle 8, the suspension bracket 9, the propeller for adjusting the suspension 10, the propeller cover 11, the cleaning rack 12, the balancing bracket 13.

DESCRIPTION OF THE EMBODIMENTS

In order to make the object, technical solution and advantages of the present invention clear, the present invention will be further described in detail below in conjunction with the accompanying drawings and implementation examples. It should be understood that the specific embodiments described here are only used to explain the present invention, not to limit the present

invention.

Please refer to Fig. 1-4, the present invention provides a technical solution: the inclined curtain wall cleaning robot, comprises the cleaning rack 12, the outer side of the cleaning rack 12 is rotatably connected with a balancing bracket 13, and the inner side of the balancing bracket is 13 provided with the balancing counterweight 7, the inner side of the cleaning rack 12 is provided with a fixed rack 5, and the top of inflatable wheels 3 is provided with the main cleaning spinner 1, the bottom end of the fixed rack 5 is fixed with the drive motor 6, the driving end of the drive motor 6 is connected to the main cleaning spinner 1 through a transmission belt, and the two ends of main cleaning spinner 1 are provided with side cleaning brushes 2.

Please refer to Fig. 3, both sides of the cleaning rack 12 are provided with several small holes. The inner sides of the balancing bracket 13 are provided with connecting rods 8 for adjusting the ballast angle. The angle between the cleaning rack 12 and the balancing bracket 13 can be fixed by the connecting rod 8.

Please refer to Fig. 3, the inflatable wheels 3 are arranged on both sides of the cleaning racket 12.

Please refer to Fig. 2, the top of the cleaning rack 12 is provided with the suspension bracket 9, and the top of the suspension bracket 9 is provided with the traction rope, the robot is lift up or lowered by the traction rope.

Please refer to Fig. 3, one side of the suspension bracket 9 is provided with a propeller cover 11, and the inner side of the propeller cover 11 is provided with a propeller 10 for adjusting the suspension. The distance between the suspension and the wall can by adjusted by the thrust of the wind generated by the propeller.

Please refer to Fig. 1, the compressed spring guide rod 4 is slid on one side of the fixed rack 5, and the spring is arranged on the outer side of the compressed spring guide rod 4. The spring can form pressure on the main spinner 1 by its elastic force, which is convenient for cleaning the glass curtain wall.

Please refer to Fig. 1, both sides of the cleaning rack 12 are provided with supports, and the main cleaning spinner 1 is arranged on top of the support. The compression spring guide rod 4 is rotatably connected to one side of the bracket, so as to adjust the pressure that the main cleaning spinner 1 pushes to the glass curtain wall. The diameter of the main cleaning spinner 1 is set to

100-150cm for better cleaning the glass curtain wall.

The principle of the present invention and use process: while use, first, by setting the main cleaning spinner 1 and inflatable wheels 2 on both sides of the cleaning rack 12, the inflatable wheels 3 contact with the wall. And because the inflatable wheels 3 use the wheels in inflatable mode, they will not cause damage to the wall. The main cleaning spinner 1 is pressed against the wall for convenient cleaning the wall. There are side cleaning brushes 2 on both sides of the main cleaning spinner 1. The side cleaning brushes 2 can clean the right angle of the wall. The fixed rack 5 is fixed on the opposite inner side of the main cleaning spinner 1. One side of the fixed rack 5 is provided with a compression spring guide rod 4, and the outer side of the compression spring guide rod 4 is provided with a spring, the pressure of the main cleaning spinner 1 against the glass curtain wall is adjusted by the compression spring guide rod 4 and the spring. The pressure of the main cleaning spinner 1 against the glass curtain wall is adjusted by compressing the spring guide rod 4 and the spring, and then by the balancing counterweight 7 set on one side of the balancing bracket 13. The transformer or other controls can be placed inside the balancing counterweight 7, so that it can form a balance weight with the main cleaning spinner 1, and the connecting rod 8 for adjusting the weight angle is connected to both sides of the cleaning rack 12, and there are several round holes set on both sides of the cleaning rack 12. After adjusting the angle of the cleaning rack 12 and the balancing bracket 13, the angle between the cleaning rack 12 and the balancing bracket 13 is fixed by the connecting rod 8. Then the main cleaning spinner 1 can start to work, and achieve a balance to facilitate the cleaning of the inclined wall. When cleaning the inclined curtain wall, shorten to lean back the balancing counterweight 7 and adjust its position to the back of the inflatable wheels 3 to form a balanced state, which is convenient for achieving the effect of the inclined wall cleaning. At last, the suspension bracket 9 is set on top of the main cleaning spinner 1, the adjusting propeller 10 is set on one side of the suspension bracket 9, and a traction rope is set on top of the suspension bracket 9. The robot can be pulled by the traction rope so that it can move up and down along the surface of the glass curtain wall and can move laterally to clean the glass curtain wall. Because the inflatable wheels 3 are inflatable tires, the robot will not cause damage to the glass curtain wall when it moves laterally. The bottom of the main cleaning spinner 1 is provided with the driving motor 6, and the driving end of the driving motor 6 is connected with the outer drive of the main cleaning spinner 1 through a transmission belt so that it can achieve

the cleaning effect on the inclined wall. It is easy to achieve the effect of cleaning from various angles, and it is very practical

The above descriptions are only preferred embodiments of the present invention, and are not intended to limit the patent scope of the present invention. Any modifications made within the concept of the present invention, equivalent replacements, and improvements, etc. should be included in the scope of patent protection of the present invention.

CLAIM

1. An inclined curtain wall cleaning robot, comprising

a cleaning rack, wherein an outer side of the cleaning rack is rotatably connected with a balancing bracket, an inner side of the balancing bracket is provided with a balancing counterweight, and wherein an inner side of the cleaning rack is provided with a fixed rack, and both sides of the cleaning rack are provided with supports;

a main cleaning spinner, arranged on top of the supports;

inflatable wheels, arranged on both sides of the cleaning rack; and

a drive motor, fixed with a bottom end of the fixed rack, a driving end of the drive motor is connected to the main cleaning spinner through a transmission belt, and two ends of the main cleaning spinner are provided with side cleaning brushes.

2. The inclined curtain wall cleaning robot of claim 1, wherein both sides of the cleaning rack are provided with several small holes.

3. The inclined curtain wall cleaning robot of claim 1, wherein the inner sides of the balancing bracket are provided with connecting rods for adjusting the ballast angle.

4. The inclined curtain wall cleaning robot of claim 1, wherein the top of the cleaning rack is provided with a suspension bracket, and the top of the suspension bracket is provided with a traction rope.

5. The inclined curtain wall cleaning robot of claim 4, wherein one side of the suspension bracket is provided with a propeller cover, and the inner side of the propeller cover is provided with a propeller for adjusting the suspension.

6. The inclined curtain wall cleaning robot of claim 1, wherein a compressed spring guide rod is

slid on one side of the fixed rack, and a spring is arranged on the outer side of the compressed spring guide rod.

7. The inclined curtain wall cleaning robot of claim 6, wherein the compression spring guide rod is rotatably connected to one side of the bracket.

8. The inclined curtain wall cleaning robot of claim 1, wherein the diameter of the main cleaning spinner is set to 100-150cm.