

Feasibility Study on Automatic Conveying of Grid Members

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Abstract

Grid member automatic conveying device, comprising: conveying part, including roller conveying unit, and roller drive unit, roller conveying unit has a plurality of roller assemblies set at intervals along the conveying direction, N roller assemblies in the conveying section are located at the ejection station; ejection portion, including a ejector rod and a ejection drive unit used to drive the ejector rod to move between the first and second positions, the ejector rod is located at the ejection station and staggered with the roller assembly in the conveying direction, the ejector rod is set downward tilted away from the roller assembly, and the height of the roller assembly is between the first and second positions; and the position sensing part of the grid member, electrically connected with the roller drive unit and the ejector drive unit; The automatic conveying device of the grid member of the utility model realizes the automatic output of the mesh member of the shot blasting machine to the transport vehicle, reduces the cost and increases efficiency, improves the per capita production volume, not only meets the production needs, but also ensures the safety of the production workshop.

Keywords

Grid Members; Roller Conveying Unit; Drive; Ejection.

1. Composition of Automatic Member Conveying Device

Features comprise: a conveying portion, including a roller conveying unit, and a roller drive unit for driving the roller conveying unit conveying grid members, the roller conveying unit having a plurality of roller assemblies set at intervals along the conveying direction, N roller assemblies in the conveying portion are located at the ejection station, N is a positive integer; the ejector portion, including a ejector rod and a ejection drive unit for driving the ejector rod to move between the first and second positions, the ejector rod is located at the ejection station and staggered with the roller assembly in the conveying direction, the ejector rod is set downward tilted away from one end of the roller assembly, and the height of the roller assembly is between the first and second positions; and the grid member position sensing portion, electrically connected with the roller drive unit and the ejector drive unit.

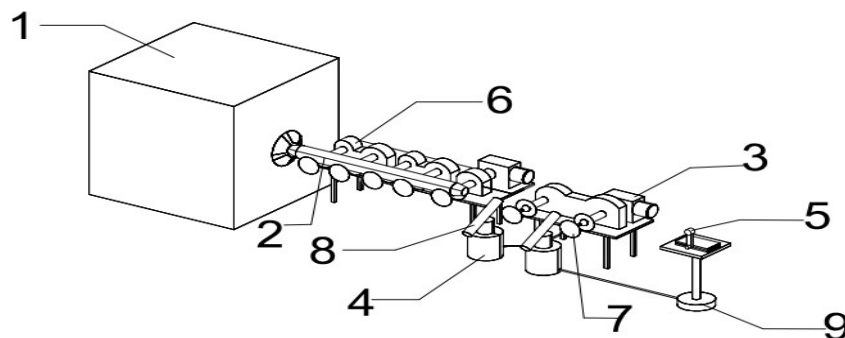
The roller assembly in the grid member automatic conveyor device includes two rollers with relative settings and a connecting shaft connecting the two rollers, and the diameter of the rollers gradually increases from the inside to the outside.

According to the member automatic conveying device, the roller drive unit includes a plurality of drive shafts respectively fixed on one side of the plurality of roller assemblies, a plurality of drive sprockets respectively fixed on a plurality of propeller shafts, a rotary drive source, a drive sprocket coaxially fixed on the output shaft of the rotary drive source, and a chain meshing with the drive sprocket and a plurality of sprockets.

The self-conveying of members is characterized by a rotary drive source as a drive motor. The grid member position sensor is a stroke switch, and the contacts of the stroke switch are disposed in front of the ejection station along the conveying direction. According to the number of ejection parts of the

member automatic conveying device is two, the two ejector rods are located in the ejection station, and each ejector rod is staggered with the roller assembly, and the ejection drive unit is an electro-hydraulic pusher.

According to the member automatic conveying device of the conveying part includes two roller conveying units, and two roller drive units, the two roller conveying units are set at intervals along the conveying direction, the roller conveying unit on the front side is located at the ejection station, and the two roller drive units are respectively connected to the two roller conveying units. This is shown in Figure 1.



In the automatic conveyor device of member 1, 1 is the shot blasting machine, 2 is the grid member, 3 is the drive motor, 4 is the electro-hydraulic pusher, 5 is the contact, 6 is the chain, 7 is the roller, 8 is the ejector rod, and 9 is the stroke switch.

Figure 1. Automatic conveyor device

2. Realize Automatic Conveying of Members

The roller drive unit of the conveyor grid member has a plurality of roller assemblies set at intervals along the conveying direction, and N roller assemblies in the conveying part are located at the ejection station, and N is a positive integer; the ejector rod and the ejector drive unit used to drive the ejector rod to move between the first and second positions, the ejector rod is located at the ejection station and staggered with the roller assembly in the conveying direction, the ejector rod is set downward tilted away from the roller assembly, and the height of the roller assembly is between the first and second positions; The position sensing part of the grid member is electrically connected to the roller drive unit and the ejector drive unit. The roller assembly consists of two rollers with opposite settings and a connecting shaft connecting the two rollers. The diameter of the roller gradually increases from the inside to the outside, and the roller drive unit includes a plurality of propeller shafts fixed on one side of the plurality of roller assemblies, a plurality of propeller sprockets fixed to a plurality of propeller shafts, a rotary drive source, a drive sprocket fixed coaxially mounted on the output shaft of the rotating drive source, and a chain meshing with the drive sprocket and a plurality of sprockets.

The rotary drive source is the drive motor, the grid member position sensor is the stroke switch, and the contacts of the stroke switch are set in front of the ejection station along the conveying direction. The number of ejector sections is two, both ejector rods are located in the ejection station, and each ejector rod is staggered with the roller assembly, and the ejector drive unit is an electro-hydraulic pusher. The conveying part includes two roller conveying units, and two roller drive units, the two roller conveying units are provided at intervals along the conveying direction, the roller conveying unit on the front side is located at the ejection station, and the two roller drive units are respectively connected to the two roller conveying units.

3. Benefits of Automatic Conveying Device

When the grid member is transported to the ejection station, one end of the member of the grid frame touches the contact of the stroke switch, the stroke switch acts, the two drive motors stop running, and then the electro-hydraulic push rod extends out. The ejector rod ejects the grid member from the roller assembly, and the grid member slides outward to the guide inclined rod on the front conveyor bracket in the inclined direction of the ejector rod, and continues to roll down the guide slash to the transporter, which plays a role in changing the conveying direction and preventing the grid member from bumping damage through the setting of the ejector rod.

The automatic conveying device of grid members can not only solve the problem of grid member transportation, but also avoid manual handling, high efficiency, realize the automatic output of the shot blasting machine to the transport vehicle, to achieve the purpose of reducing costs and increasing efficiency, and at the same time improve the per capita production volume, not only to meet the production needs, but also to ensure the safety of the production workshop, simple structure, convenient operation, high efficiency.

4. The Automatic Conveyor of Members was Implemented

The following will be combined with the accompanying drawings in the embodiment, the technical solution in the embodiment is clearly and completely described, Figure 1 is a structural schematic diagram of the automatic conveyor device of the grid member in the embodiment. As shown in Figure. 1, an automatic conveying device of the grid member in the present embodiment is disposed on the front side of the shot blasting machine 1, for transporting the grid member 2 output by the shot blasting machine 1 to the transport vehicle, including a rear conveyor bracket, a front conveyor bracket, a conveying portion, two ejector portions, and a grid member 2 position sensing portion.

The front conveyor bracket is provided with a guide inclined rod located to the left of the ejection station, and its lower end is tilted away from the ejection station. The conveying part includes two roller conveying units, and two roller drive units corresponding to the two roller conveying units, the two roller conveying units are spaced along the conveying direction, and the roller conveying unit on the rear side is rotated and installed on the rear conveyor bracket. The roller conveyor unit on the front side is located at the ejection station and rotated to be mounted on the front conveyor bracket.

Each roller conveyor unit has a plurality of roller assemblies with interval settings. The plurality of roller assemblies is set at equal intervals along the conveying direction. The conveying direction is the output direction of the grid member 2 from the output of the shot blasting machine 1. Each roller assembly includes two rollers 7 with opposite settings and connecting shafts connecting two rollers 7. The diameter of roller 7 gradually increases from the inside to the outside, in the shape of a trumpet, so that the member can be fully kept straight forward on the connecting axis.

The roller drive unit is used to drive the corresponding roller conveyor unit conveyor grid member 2, including a plurality of propeller shafts fixed on the right side of the plurality of roller assemblies, a plurality of drive sprockets fixed on the plurality of propeller shafts, a rotary drive source, a drive sprocket fixed coaxially mounted on the output shaft of the rotating drive source, and a chain 6 meshed with the drive sprocket and plural sprockets. The rotary drive source is the drive motor 3. The drive motor 3 seats of the drive motor 3 located on the rear side are fixed on the rear conveyor bracket. The drive motor 3 located on the front side is fixed on the front conveyor bracket with 3 drive motors.

Two ejector portions are provided at intervals, each ejecting portion comprises ejector rod 8 and a ejection drive unit for driving the corresponding ejector rod 8 to move between the first and second positions. The ejector rod 8 is located at the ejection station and staggered with the roller 7 assembly in the conveying direction, and the ejector rod 8 is tilted downward at one end away from the roller assembly, the first position is lower than the roller assembly, and the second position is higher than

the roller assembly. In the present embodiment, the ejector rod 8 is an oblique iron, and the ejector drive unit is an electro-hydraulic actuator 4.

The position sensing part of the grid member 2 is electrically connected with the roller drive unit and the ejector drive unit. In the present embodiment, the position sensor of the grid member 2 is a stroke switch 9, and the contact 5 of the travel switch 9 is disposed in front of the ejection station along the conveying direction. The circuit of the stroke switch 9 is connected in parallel with the drive motor 3, and when the drive motor 3 stops working, the stroke switch 9 is also de-energized at the same time. The contact 5 of the stroke switch 9 has an automatic reset function, and when the member is not pressed against the contact 5, the contact 5 can return to the original position.

When the grid member 2 is transported to the ejection station, one end of the member of the grid frame touches the contact 5 of the stroke switch 9, the stroke switch 9 acts, the two drive motors 3 stop running, and then the electro-hydraulic push rod 4 extends. The top rod pushes the grid member 2 out of the roller assembly, the grid member 2 follows the inclination direction of the top rod, slides to the outside to the guide oblique rod on the front conveyor bracket, and continues to roll down the guide oblique rod to the transport vehicle, through the setting of the top rod plays a role in changing the conveying direction and preventing the grid member 2 from bumping damage, so as to finally realize the automatic shot blasting machine 1 output grid member 2 to the transport vehicle, simple structure, convenient operation and high efficiency.

5. Conclusion

The development speed of modern society is relatively fast, and various construction projects continue to be carried out, which has brought about economic improvement. Different from general mechanical equipment, the automatic shot blasting machine itself is very large, and in the daily application process, special attention needs to be paid to operation and maintenance. In the process of shot blasting and rust removal, the grid members are transported from the shot blasting machine after rust removal, and the grid members will run forward when conveying, due to the limited workshop space, the grid members need to be manually lifted manually when transported to a fixed position, which is time-consuming and laborious, and the efficiency is very low, and there are some potential safety hazards. In order to improve production efficiency and avoid safety accidents. The use of grid member automatic conveying device, this device can not only solve the problem of automatic transportation of grid members, but also save energy and high efficiency, can achieve the purpose of cost reduction and efficiency increase, and at the same time improve the production volume, not only to meet the production needs, but also to ensure the safety of the manufacturing plant.

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