

Non-Contact Express Self-Service Pickup Box

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Abstract

This project discloses a contactless express self-service pick-up box, which comprises a cabinet body, wherein pick-up boxes are sequentially arranged on both sides of the front side of the cabinet body from top to bottom; the bottom of the cabinet body is fixedly connected with a shell; cavities are arranged on both sides of the inner cavity of the shell; and a through groove is formed at the bottom of the cavity. In this project, the cabinet, pick-up box, shell, cavity, through slot, moving wheel, moving column, rack plate, motor, driving shaft, driving gear, driven gear, rotating shaft, bearing seat I, bearing seat II, base, sliding plate, sliding chute and sliding block are arranged to achieve the advantage of convenient movement, which solves the problem that the existing contact express self-service pick-up box is inconvenient to move.

1. Preface

E-shopping has been more and more accepted by people, and has gradually become an indispensable mainstream consumption mode in people's lives. The darling of the present era is the express delivery industry, but it is also a great challenge. More and more express delivery needs to be delivered, and new technologies should be continuously developed to solve some problems arising from the express delivery process. At present, the express self-service pick-up boxes used in China use electronic authentication to access mails, which involves many fields such as express delivery industry and communication industry.

There are many express self-service pick-up boxes in the market. Traditional non-contact express self-service pick-up boxes are inconvenient to move, which are inconvenient for people to carry or transfer because of their large size and poor stability, which will affect the use of self-service pick-up boxes, fail to meet the needs of users, and reduce the practicality of non-contact express self-service pick-up boxes.

2. Project Content

The purpose of this project is to provide a contactless express self-service pick-up box, which has the advantage of convenient movement and solves the problem that the existing contactless express self-service pick-up box is inconvenient to move.

In order to achieve the above purpose, the project provides the following technical scheme: the contactless express self-service pick-up box comprises a cabinet body, wherein pick-up boxes are sequentially arranged on both sides of the front side of the cabinet body from top to bottom, the bottom of the cabinet body is fixedly connected with a shell, cavities are arranged on both sides of the inner cavity of the shell, a through groove is arranged at the bottom of the cavity, a moving wheel is arranged in the inner cavity of the through groove, and the top of the moving wheel is movably connected with a moving column through a movable shaft. The top of the moving column penetrates into the cavity, rack plates are arranged on both sides of the moving column through mounting slots, an electric motor is fixedly connected to the outer side of the cavity, and the output end of the electric motor is fixedly connected with a driving shaft, the surface of which is provided with a driving gear which is located on the left side of the moving column and meshes with the surface of the rack plate which is located on the right side of the

moving column and is engaged with a driven gear, and the axis of the driven gear is sleeved with a rotating shaft.

The front surface and the back surface of the rotating shaft are sleeved with a bearing seat I, and the outer side of the bearing seat I is fixedly connected with the inner side of the front side and the inner side of the rear side of the cavity.

The front face of the driving shaft is sleeved with a bearing seat 2, and the front face of the bearing seat 2 is fixedly connected with the outer side of the front side of the cavity.

Two sides of the bottom of the cabinet body are fixedly connected with a base, and the bottom of the base is fixedly connected with an anti-skid pad.

The front and back surfaces of the inner cavity of the cavity are fixedly connected with sliding plates, the inner side of the sliding plate is provided with a sliding chute, the inner cavity of the sliding chute is slidably connected with a sliding block, and the inner side of the sliding block is fixedly connected with the front and back surfaces of the moving column.

3. Innovation Points

In this project, the cabinet, pick-up box, shell, cavity, through slot, moving wheel, moving column, rack plate, motor, driving shaft, driving gear, driven gear, rotating shaft, bearing seat I, bearing seat II, base, sliding plate, sliding chute and sliding block are arranged to achieve the advantage of convenient movement, which solves the problem that the existing contact express self-service pick-up box is inconvenient to move

In this project, the sliding chute and slider are set to stabilize the movement of the moving column, which solves the problem of shaking when moving. By setting the anti-skid pad, the friction between the base and the ground is increased, avoiding the base from slipping, and increasing the stability of the cabinet. By setting the bearing seat I, the rotating shaft is stabilized in rotation, which increases the stability when rotating and prevents the rotating shaft from shaking when working and using.

4. Implementation Mode

Please refer to Figure 1-3. The contactless express self-service pickup box includes a cabinet body 1. The two sides of the front side of the cabinet 1 are arranged with a pickup box 2 from top to bottom. The bottom of the cabinet 1 is fixedly connected with a shell 3. Both sides of the inner cavity of the shell 3 are provided with cavities 4. The bottom of the cavity 4 is provided with a through groove 5, the inner cavity of the through groove 5 is provided with a moving wheel 6, and the top of the moving wheel 6 is movably connected with a moving column 7 through a movable shaft. The top of the moving column 7 penetrates through the inner cavity of the cavity 4, the two sides of the moving column 7 are provided with toothed strip plates 8 through the mounting slots, the outer side of the inner cavity of the cavity 4 is fixedly connected with the motor 9, the output end of the motor 9 is fixedly connected with the drive shaft 10, the surface of the driving shaft 10 is provided with a driving gear 11, and the surface of the driving gear 11 is located on the left side of the moving column 7 and is meshed with the surface of the rack plate 8. A driven gear 12 is meshed on the surface of the rack plate 8 and on the right side of the moving column 7, and a rotating shaft 13 is sheathed at the shaft center of the driven gear 12;

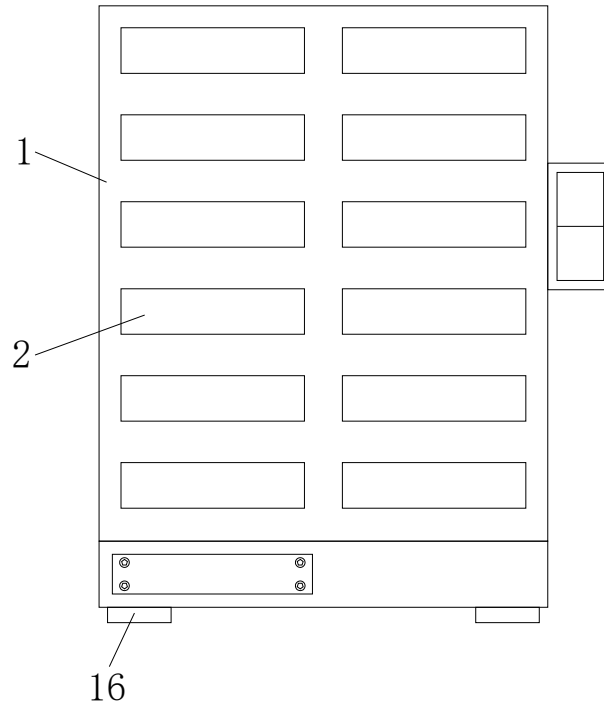


Figure 1. Shows the structure of the project

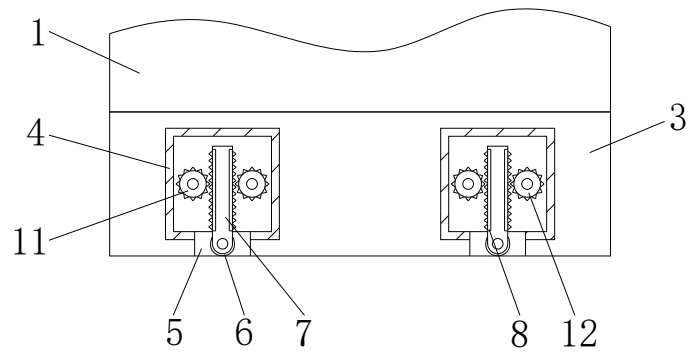


Figure 2. Shows the sectional view of the cavity structure of the project

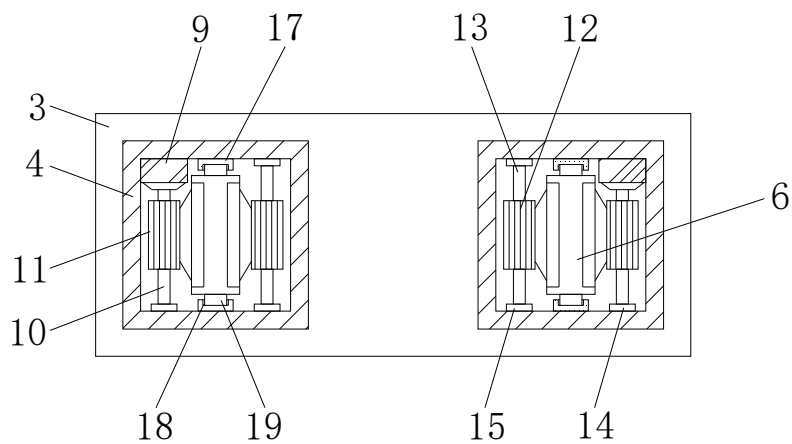


Figure 3. Shows the sectional view of the cavity structure of the project

In the figure: 1. Cabinet; 2. Take-off box; 3. Shell; 4. Cavity; 5. Through groove; 6. Moving wheel; 7. Moving column; 8. Rack plate; 9. Motor; 10. Driving shaft; 11. Driving gear; 12. Driven gear;

13. Rotating shaft; 14. Bearing block 1; 15. Bearing seat 2; 16. Base; 17. Sliding plate; 18. Sliding groove; 19. Sliding block.

The front and back sides of the rotating shaft 13 are both jacketed with a bearing seat-14. The outer side of the bearing seat-14 is fixedly connected with the inner side of the front side and the rear side of the cavity 4. By setting the sliding chute 18 and the sliding block 19, the moving column 7 can move stably and solve the problem of shaking when the moving column 7 moves; The front of the drive shaft 10 is sheathed with a bearing seat 15. The front face of the bearing block 15 is fixedly connected with the outer side of the front side of the inner cavity of the cavity 4. The friction between the base 16 and the ground is increased by setting the anti-skid pad, so as to avoid the sliding of the base 16 and increase the stability of the cabinet 1;

Both sides of the bottom of the cabinet 1 are fixedly connected with the base 16, and the bottom of the base 16 is fixedly connected with the anti-skid pad. By setting the bearing seat-14, the rotation stability of the rotating shaft 13 is increased, and the shaking problem of the rotating shaft 13 is prevented;

Slide plate 17 is fixedly connected to the front and back sides of the cavity of the cavity 4, the inner side of the slide plate 17 is provided with a sliding groove 18, the inner cavity of the sliding channel 18 is slidably connected with a sliding block 19, and the inner side of the sliding block 19 is fixedly connected with the front and back surfaces of the moving column 7, Through the setting of cabinet body 1, taking box 2, shell 3, cavity 4, through groove 5, moving wheel 6, moving column 7, rack plate 8, motor 9, drive shaft 10, driving gear 11, driven gear 12, rotating shaft 13, bearing seat 14, bearing seat II 15, base 16, slide plate 17, chute 18 and slide block 19, the advantages of easy moving are achieved, It solves the problem that the existing contact express self-service pickup box is not easy to move. It will not be inconvenient for people to carry out the transportation or transfer because of the large size of the self-service pick-up box. The stable effect is good and the use of the self-service pickup box will not be affected. It can meet the needs of users and improve the practicability of the contactless express self-service pickup box.

When the cabinet 1 needs to be moved, the user opens the motor 9 through the external controller. The motor 9 drives the driving gear 11 to engage with the rack plate 8 through the drive shaft 10 and the bearing seat 15, and the rack plate 8 moves down smoothly with the help of the driven gear 12, the rotating shaft 13 and the bearing seat-14, The moving column 7 is assisted by the slide block 19 and the sliding chute 18 to drive the moving wheel 6 to move downward so that it extends out of the bottom of the through groove 5. The moving wheel 6 contacts with the ground to support the cabinet body 1. The user pushes the cabinet body 1 to move to the designated area. After reaching the designated area, the moving wheel 6 is recovered to the inner cavity of the through groove 5 through the above reverse operation, which increases the stability of the cabinet body 1 after being placed, It can prevent the cabinet 1 from moving due to external force, and protect the moving wheel 6, so as to achieve the advantages of easy moving, solve the problem that the existing self-service pick-up box is not easy to move, and it will not be inconvenient for people to carry out the transportation or transfer because of the large size of the self-service pickup box, and the stable effect is good, which will not affect the use of the self-service pickup box, It can meet the needs of users and improve the practicability of contactless express self-service pickup box.

5. Ends

The standard parts used in this project can be purchased from the market and can be customized. The specific connection mode of each part adopts the mature bolt, rivet, welding and other conventional means in the existing technology. The machinery, parts and equipment are all the conventional models in the existing technology, and the control mode is automatic

control through the controller, The control circuit of the controller can be realized by simple programming by those skilled in the art.

Acknowledgments

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