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A New Industrial Design Mode of Plastic Film Recycling Equipment for Agricultural Use

Leiming Zhu

Wenzhou Vocational & Technical College, Wenzhou. 325035, China

mingwes@sohu.com

Abstract

The purpose of this design is to provide a kind of agricultural plastic film recovery device, through the drive device, the accumulation of plastic film on the teeth of the plastic film in time to clean up, avoid the film wrapped on the teeth of the plastic film caused by the phenomenon of film, solve the existing plastic film recovery device is easy to jam the film caused by mechanical equipment failure; Through the coordination of the driving device and the film collecting box, the film wrapped around the teeth of the film collecting box will fall off, and the film will be collected uniformly, avoiding manual cleaning and collecting of the film on the teeth of the film collecting device, and solving the problem that it is difficult to release the mold of the existing film recycling device and requiring manual cleaning and collecting.

Keywords

mulch; Device; Industrial design; innovation.

1. Background Technology

The utility model belongs to the technical field of agricultural machinery, especially to an agricultural film recycling device. Plastic film mulching is a mature agricultural cultivation technology, which can protect water and fertilizer, maintain humidity, effectively increase and prolong the growing period of crops, and ensure the increase of crop yield. With the continuous development of agricultural modernization, the use of plastic film in rural areas has become an important means to ensure high and stable agricultural yield. At present, the use of artificial film, mechanical film, has been widely used, but the use of plastic film recycling is very difficult and complex. With the extension of the cultivation period of mulching, the recovery of residual mulching is low, which easily causes mulching pollution. After the mulch is harvested, the residual mulch left in the field will affect the next crop growth, so it must be removed.

At present, the plastic film recycling device is prone to film sticking due to the increase of plastic film collection, which leads to the failure of the plastic film recycling device. In addition, the existing plastic film recycling device has complex mechanisms, which makes maintenance difficult. When the plastic film recycling device recycles the plastic film, a large amount of plastic film is wrapped around the teeth of the plastic wrap, which requires manual cleaning and collection, which takes time and labor, leading to the difficulty of stripping the plastic film recycling device and affecting the work efficiency.

2. Design Content

In order to solve the above technical problems, the design is realized through the following technical solutions:

The design is an agricultural film recycling device, including shell; A first guide rail is arranged on a surface of the shell; The first guide rail and a surface slide are connected with a first sliding

ISSN: 2688-9323

table cylinder; A surface of the first sliding table cylinder is fixedly connected with an electric telescopic rod; One end of the electric telescopic rod is fixedly connected with a crossbar; A surface of the crossbar is fixedly connected with four hug teeth.

Further, the shell is internally provided with a first drive chamber; A surface of the first driving chamber is fixedly connected with two first motors; One end of the output shaft of the first motor is fixedly connected with a screw rod; A nut is connected with the thread on the circumferential side of the screw rod; The nut is fixedly connected with a receiving membrane box on a surface.

Further, a surface of the first drive chamber is provided with a second guide rail; A surface fixedly connected slide block of the receiving membrane box; A surface of the slide block is sliding connected with a second guide rail.

Further, a second drive chamber is arranged inside the shell; A third guide rail is arranged on a surface of the second driving chamber; A surface of the third guide rail is sliding connected with a second sliding table cylinder; A surface of a cylinder of the second sliding table is fixedly connected with a second motor; One end of the output shaft of the second motor is fixedly connected with a long rod.

Further, one end of the screw rod is rotary connected with the first drive chamber.

Further, the first drive chamber is provided with a first feed perforation; The surface of the first consistent perforation is sliding connected with the receiving membrane box.

Further, a surface of the second drive chamber is provided with a second through hole; The surface of the second through hole is sliding connected with the second sliding table cylinder.

Further, a surface of the housing is fixedly connected with four rollers; A surface of the shell is fixedly connected with a pull ring.

3. The Design has the Following Beneficial Effects

1) through the design of drive, when tooth hug membrane on the accumulation of a large number of plastic, plastic recycling equipment to stop working, the motor drive the long rod rotation, timely clean up wound in his arm film mulch on teeth, to avoid the mulch film wound in his arm on the tooth card film phenomenon, so as to cause mechanical equipment failure problems, existing plastic recycling equipment structure is relatively complex, once appear, equipment failure and maintenance more difficult, this design has simple structure, is not easy to happen card film cause equipment failure problems, not only save time and effort, and effectively improve the plastic recycling efficiency of plastic recycling equipment.

2) in this design through the drive and accept bellows to cooperate, make the wound in his arm after the film mulch on tooth loss, in the membrane box, and then will be treated as mulch unified collection, do not need to manually from the hug and collecting film mulch on the tooth, the existing plastic recycling equipment demoulding difficult, requires human to clean collection, laborious, this design can automatic cleaning and recycling hug film mulch on the tooth, effectively improve the efficiency of plastic recycling.

Of course, the implementation of the design of any product does not necessarily need to achieve all the above mentioned advantages.

4. Design Description

In order to more clearly explains the design example of technical solution, below the appended drawings of use necessary to implement the case description is introduced simply, clearly, described below the appended drawings is just this design, some of the cases, for the field common technical personnel, on the premise of not giving creative labor, can also according to the appended drawings for other appended drawings.See figure 1-5.

ISSN: 2688-9323

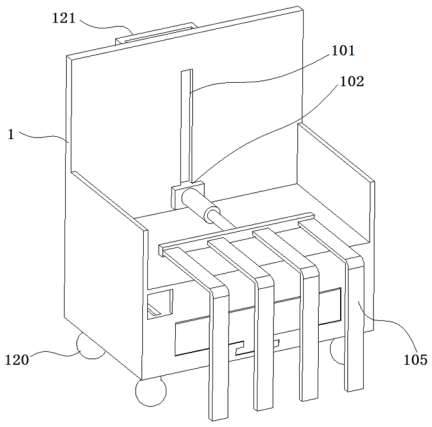

Fig. 1 is a structural diagram of a plastic film recycling device designed for agricultural use.

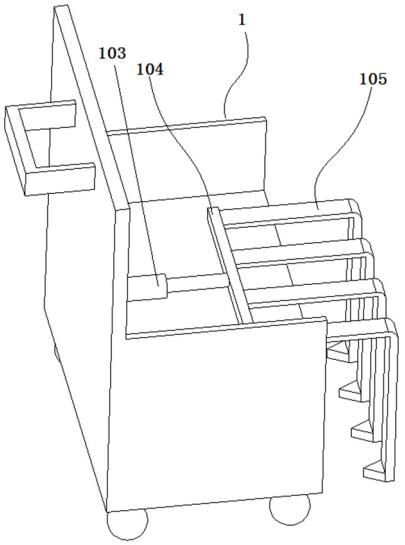

Fig. 2 is a schematic diagram of the other side of FIG. 1.

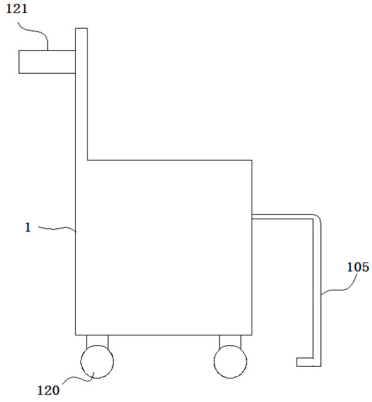

Fig. 3 is a schematic diagram of the elevation structure in FIG. 2.

ISSN: 2688-9323

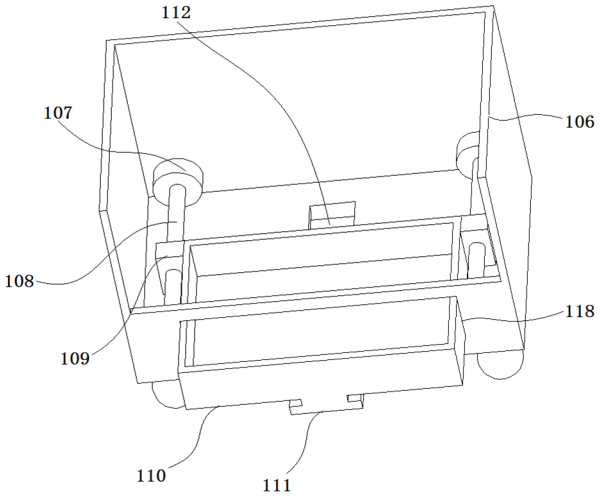

Fig. 4 is a schematic diagram of the first drive chamber.

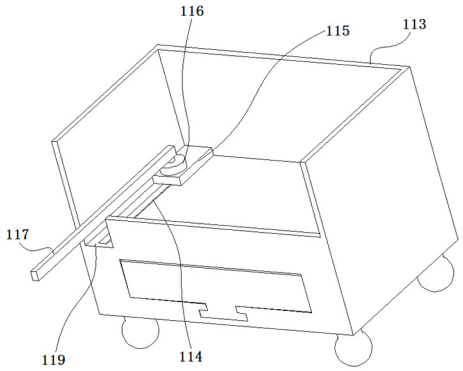

Fig. 5 is the structural diagram of the second drive chamber;

In the attached figure, the parts represented by each label are listed as follows:

1 - shell, 101 - the first guide rail, 102 - the first slide cylinder, 103 - electric telescopic rod, 104 - bar, 105 - hug membrane teeth, 106 - the first driving room, 107 - the first motor, a 108 - screw, nut, 109-110 - bellows, and 111 - the second guide rail, 112 - slide block, 113 - the second driving room, 114 - the third rail, 115 - the second slide cylinder, 116 - the second motor, 117 - long pole, 118 - the first punch, 119 - the second through hole, roller, 120 -, 121 - TAB.

Involved in the field of agricultural machinery technology. The design includes a shell; A first guide rail is arranged on a surface of the shell; The first guide rail and a surface slide are connected with a first sliding table cylinder; A surface of the first sliding table cylinder is fixedly connected with an electric telescopic rod; One end of the electric telescopic rod is fixedly connected with a crossbar; A surface of the crossbar is fixedly connected with a plurality of wrap teeth; One end of the output shaft of the first motor is fixed and connected with the screw rod; A nut is connected with the thread on the circumferential side of the screw rod; The surface of the nut is fixedly connected with a receiving membrane box. The design through the drive device, the accumulation of plastic film on the teeth of the hug clean up in time, avoid wrapping film on the teeth of the hug caused by film stuck phenomenon; Through the coordination of the driving device and the collecting film box, the film wrapped around the teeth of the holding film will fall off and fall into the collecting film box. The film will be collected and processed uniformly, avoiding manual cleaning and collecting of the film on the teeth of the holding film, and improving the recycling efficiency of the film.

ISSN: 2688-9323

The utility model relates to an agricultural film recycling device, including a shell (1); The utility model is characterized by: a first guide rail (101) is arranged on a surface of the shell (1); The first guide rail (101) has a surface sliding connection with a first sliding table cylinder (102); A surface of the first sliding table cylinder (102) is fixedly connected with an electric telescopic rod (103); One end of the electric telescopic rod (103) is fixedly connected with a horizontal rod (104); A surface of the cross bar (104) is fixedly connected with a plurality of wrap teeth (105).

2) according to a kind of agricultural film recycling device mentioned in claim 1, its feature is that the first drive chamber (106) is arranged inside the shell (1); A surface of the first drive chamber (106) is fixedly connected with a plurality of first motors (107); One end of the output shaft of the first motor (107) is fixedly connected with a screw rod (108); A nut (109) is connected with the thread on the peripheral side of the screw rod (108); The nut (109) is fixedly connected with a receiving membrane box (110) on a surface.

4) according to the agricultural film recycling device mentioned in claim 2, its feature is that a surface of the first drive chamber (106) is provided with a second guide rail (111); The film box (110) has a surface fixed connection slider (112); A surface of the slider (112) is slide connected with a second guide rail (111).

5) according to the agricultural film recycling device mentioned in claim 1, the feature is that the shell (1) is equipped with a second drive chamber (113); A third guide rail (114) is arranged on a surface of the second drive chamber (113); The third guide rail (114) has a surface sliding connection with a second sliding table cylinder (115); A surface of the second sliding table cylinder (115) is fixedly connected with a second motor (116); One end of the output shaft of the second motor (116) is fixedly connected with a long rod (117).

6) according to the agricultural mulch recovery device mentioned in claim 2, the characteristic is that one end of the screw rod (108) is rotated connected with the first drive chamber (106).

7) according to the agricultural film recycling device mentioned in claim 2, its feature is that the first drive chamber (106) is provided with a first perforation (118); The surface of a uniform perforation (118) is sliding connected with a film receiving box (110).

8) according to the agricultural film recycling device mentioned in claim 4, the feature is that a surface of the second drive chamber (113) is provided with a second through hole (119); A surface of the second through hole (119) is slide connected with a second sliding table cylinder (115).

9) according to the agricultural film recycling device mentioned in claim 1, the feature is that a surface of the shell (1) is fixedly connected with a number of rollers (120); The shell (1) has a surface fixedly connected with a gripper (121).

5. Specific Implementation Methods

The following is a clear and complete description of the technical scheme in the design embodiments based on the attached drawings in the design embodiments. Obviously, the described embodiments are only part of the design embodiments, not all of the embodiments. Based on the embodiments in this design, all other embodiments obtained by ordinary technicians in this field without making creative labor are within the scope of protection of this design.

Please refer to figure 1-3. This design is an agricultural film recycling device, including shell 1; A first guide rail 101 is arranged on a surface of the shell 1; The first guide rail 101 is in the vertical direction; The first guide rail 101 and the surface slide connected with the first sliding table cylinder 102; A surface of the first sliding table cylinder 102 is fixedly connected with an electric telescopic rod 103; One end of the electric telescopic rod 103 is fixed connected with a

ISSN: 2688-9323

crossbar 104; One surface of the crossbar 104 is fixedly connected with four hug teeth 105; Tooth 105 holds the mulch of the ground; And wrap the mulch around the tooth 105 of the wrap. Tooth 105 can adjust length and height; The first sliding table cylinder 102 drives the roller tooth 105 up and down through the electric telescopic rod 103 and the horizontal rod 104; Adjust the height of tooth 105; The electric telescopic rod 103 drives the tooth 105 to move horizontally through the crossbar 104. Adjust the length of tooth 105.

Wherein, a shell 1 and a surface are fixedly connected with four rollers 120; A surface of shell 1 is fixedly connected with griphook 121; The tractor drives the film recycling device through griphook 121 in the farmland movement; Carry out plastic film recycling.

As shown in FIG. 1 and FIG. 4, the first drive chamber 106 is welded inside shell 1; A surface of the first drive room 106 is fixedly connected with two first motors 107; One end of the output shaft of the first motor 107 is fixed with a screw rod 108; One end of the screw rod 108 is rotated connected with the first drive chamber 106. A nut 109 is connected with a screw rod 108 weeks and a side thread. Nut 109 is fixedly connected with a receiving membrane box 110; A second guide rail is arranged on a surface of the first driving chamber 106. A surface fixed connection slide block 112; The surface of the slide block 112 is slide connected with the second guide rail 111; The first drive room 106 opens with a first perforation 118; A sliding connection is made between a surface of a first perforation 118 and a receiving membrane box 110; The first motor 107 rotates and drives the film box 110 to move horizontally through the screw rod 108 and nut 109. Collect the mulch removed from tooth 105.

As shown in FIG. 1 and FIG. 5, the second drive room 113 is welded inside shell 1; A third guide rail 114 is arranged on a surface of the second driving chamber 113; A surface of the third guide rail 114 is sliding connected with a second sliding table cylinder 115; The surface of the second sliding table cylinder 115 is fixed and connected with the second motor 116; The output shaft of the second motor 116 is fixedly connected with a long bar 117. One end of the long bar 117 is perpendicular to the output shaft of the second motor 116. A second through hole 119 is arranged on a surface of the second drive chamber 113; The surface of the second through hole 119 is sliding connected with the cylinder 115 of the second sliding table; The second sliding table cylinder 115 drives the long bar 117 to move horizontally through the second motor 116; Make the long bar 117 move through the second through hole 119 to the outside of the second drive chamber 113; Motor 116 drives long bar 117 to rotate to the lower part of tooth 105; Clean the mulch around tooth 105.

The working principle of this embodiment is as follows: when more mulch is wound on tooth 105; Film recycling device stops film collection; The first sliding table cylinder 102 drives the wrap tooth 105 upward movement through the electric telescopic rod 103 and the horizontal rod 104; The electric telescopic rod 103 contracts and drives the tooth 105 to move horizontally through the crossbar 104. Finally, the tooth 105 stays above the tooth 105. The first motor 107 rotates and drives the film box 110 to move horizontally through the screw rod 108 and nut 109. Make the collecting membrane box 110 under the tooth 105; The second sliding table cylinder 115 drives the long bar 117 to move horizontally through the second motor 116; Make the long bar 117 move through the second through hole 119 to the outside of the second drive chamber 113; Motor 116 drives long bar 117 to rotate between holding tooth 105 and receiving membrane box 110; Then the electric telescopic rod 103 extends to drive the tooth 105 horizontal movement through the crossbar 104; Long bar 117 blocks the mulch on the tooth 105 and moves with the tooth 105; Make the mulch come out of the tooth 105 and fall into the box 110. Clean up the mulch wrapped on tooth 105 in time; Avoid the film wrapping on the tooth 105 of the wrap causing the film stuck phenomenon; Thus causes the mechanical equipment breakdown question; Collecting membrane box 110 collected and treated the plastic film on tooth 105; No manual cleanup collection required; Save manpower and material resources; It increases the efficiency of plastic film recycling equipment.

ISSN: 2688-9323

In the description of this specification, a reference to the term "an embodiment", "an example", "a concrete example", etc., means that the specific features, structures, materials or features described by the embodiment or example are included in at least one embodiment or example of the design. In this specification, a schematic representation of the above terms does not necessarily refer to the same embodiment or example. Furthermore, the specific features, structures, materials, or features described may be combined in an appropriate manner in any one or more embodiments or examples.

6. Conclusion

The above disclosed preferred embodiments of the design are only used to help elaborate the design. Preferred embodiments do not describe in detail all the details nor do they limit the invention to the specific embodiments described. Obviously, according to the contents of this manual, a lot of modifications and changes can be made. The purpose of selecting and describing these embodiments in this manual is to better explain the principle and practical application of this design, so that technicians in the technical field can well understand and use this design. This design is only limited by the claim and its full scope and equivalent.

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