

Semi-Automatic Packaging Systems

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Abstract. The system is set up mainly for "Online shop" and other entrepreneurs in the early stage, lack of manpower with heavy workload problem. Design a mechanical device can be used to personalize a variety of packaging materials, the size of goods. By simply provide a power source, simple manual work to complete the product packaging, designed to follow the environmental protection, efficient and economical design.

1. Introduction

With the rapid development of e-commerce industry and logistics industry. According to the November 11, 2014 the Successful payment orders per minute peak of 79 million transactions per minute, Alipay day turnover of 57.1 billion yuan (about 9.3 billion dollars), Compared to 2013's 36.2 billion Once again set a record. In such a huge volume of transactions behind, three-quarters of merchandise require physical delivery, Dual 11 logistics data: It ended at 14:00 on November 11 STO 12 million; YTO 10,000,000; ZTO 9,150,000; YUNDA 6,660,000; TTK express 3,400,000; QUANFENG express 1,360,000; GUOTONG express 500,000; UC express 450,000; FAST express 400,000.

Experts pointed out that China's e-commerce, online shopping in affecting young people's consumption patterns, changing consumer habits, while young are more affected China's economic development. Small shop entrepreneurs faced with such a lot of work in case of a shortage of manpower, can greatly improve efficiency through automation of packaging lines, reduce costs.

2. Technical specifications

We demand the online shop for a preliminary investigation, considering the cost of shipments and determine a program based on manual mechanical automation devices, as shown below

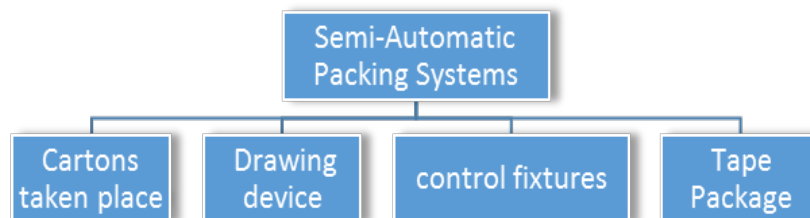


Chart 1 Design of functional decomposition

Powered by a hand lever, a plurality of traction line linkage control of each mechanical tentacles, pulling his arms away from carton to solve different problems, we will use a combination of the two pulleys coaxial (sample carton 25 * 40cm), Size shaft final ratio of 2.5 / 4, Prepare a variety radius pulley can be freely combined according to the size of packaging cartons, folding cartons complete filler filling finalize merchandise package.

3. Key functions to achieve

Cartons take place: According to the majority of businesses for boxes usage, we use the most common tile unfolded carton. All boxes neatly arranged on one side of the track, while the other end of the track is our pull means.

Drawing device: Take two suction cups and a combination of rod, one end of the rod is stretched handrail for packers, this trolley suitcase same principle. The fixed position while the box is pulled pull retraction device, control box at the bottom of the bezel closed upon.

Control damper closed retraction device: Shutter closed inward contraction completed by the following four tentacles, tentacle with the lower end of spring, spring done under normal circumstances, tentacle open; bottom tentacle comes with a sturdy rope or wire, connected by winding apparatus underneath pull armrest on another small armrest can be pulled back in the box corresponding to the position so that the rope shrink by overcoming the force of the spring so that the linkage tentacle contraction.

Delivery of goods: The box can be pulled to the track at the end. Relates to the number of different types of shapes and arrangement, nor need to consider the human, this is no longer mechanical design, conduct independent filling filler.

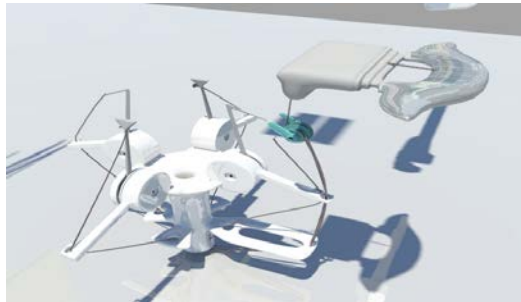


Chart 2 Case forming mechanism

Fixed box: At the end of the track design has been angle bend. At this point as long as push boxes to be a fixed position corresponding to the tape winding. This location is a modification of the normal track, disconnect the intermediate position, leaving the tape width of the gap slightly, while the top of the closed inward top, also leaving gaps.

Tape Package: Small armrest connection pole, small perimeter control large perimeter; At the end of the rod is ordinary tape, but the top is connected by a spring, the purpose is to squeeze in time for the tape and cardboard closely. When packing finished goods at right angles from the front push and shake means first transverse paste, then paste the revolution of the week again, and finally completed

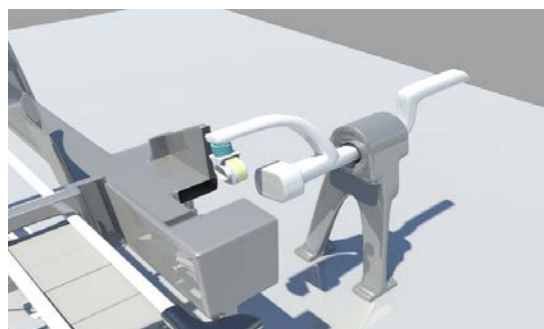


Chart 3 Tape wrapping mechanism

4. Innovation

1. Combination suction cup and a barrier instead require manual adjustment, it can come up with a cardboard flat and three-dimensional
2. The presence of tentacles to make the bottom of the cardboard is folded, which is controlled by a set of springs and two public concentric shafts can be achieved runner
3. Week square box need to paste, but the tape rotation oval design, along with the supporting tape is a spring, the purpose is to glue the box tape more firmly
4. Paste the top and bottom once the action is completed. Generally after the first back cap, but in this apparatus, the box operations are all on the table, can be put back at the bottom of the folded article, and then into a specially designed slot cover fixed once lived after pasting.

5. Conclusion

Automated packaging machine in the packaging of goods occupy a lot of advantages, according to the current domestic Internet economy and small e-commerce operations, packaging sales demand for sales of goods standardization, it has a very broad prospects. Use a combination of a variety of mechanical bodies at a lower cost, this also provides an excellent packaging solution for small and medium electricity suppliers, this technology is bound to experience the value of their own in practice.

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