

## Packaging Carton Forming Machine

Xueping Cao <sup>a</sup>, Shuai Guo <sup>b,\*</sup> and Yuhuan Zhang <sup>c</sup>

School of Mechanical and Electronic Engineering, Shandong University of Science and Technology, Qingdao, China

<sup>a</sup>1097347616@qq.com, <sup>b,\*</sup> 591325761@qq.com, <sup>c</sup>1609953149@qq.com

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*Abstract: In this design, an ordinary carton forming machine is designed as a new type of paste-type heaven and earth cover self-synthesizing machine. The forming machine cuts and pleates the cardboard, and then completes the carton stamping and molding at one time. The carton forming machine requires a full cycle of movement to complete a machining process, which requires a reasonable movement time relationship for each component. so, at design time, we ensure that the molding process is a complete activity cycle by controlling the movement between the various components of the carton forming machine and adjusting the timing of its movement.*

*Keywords: Carton forming machine; Cardboard bending; Cam linkage mechanism; Rack and pinion.*

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### 1. INTRODUCTION

In daily life, different products have their own specific requirements and unique characteristics. We select suitable raw materials according to these specific requirements and unique characteristics of the products. The size of the carton should be appropriate and the design structure must be the design of the carton is reasonable and elegant. In the actual production of the packaging carton, we must protect the product, beautify the product, allow the customer to use it conveniently and quickly, increase the usage of the customer, increase the sales volume, and other purposes. The use of paper boxes is getting higher and higher.

### 2. CARTON PACKAGING MACHINE MOVEMENT PRINCIPLE

The two-sided mechanism with a paper tongue, a mechanism for adjusting the size of the carton, a link motion device with a cam, a pulley device, a cone gear device, and a motor together form a paste type carton forming machine. The two pulleys are respectively installed on two sides of the big cam, and the belt connects two pulleys symmetrically distributed on the left and right sides, and the other small cam and the two pulleys form a 90-degree angle and are engaged by a bevel gear. Pass power. Finishing the process of a carton forming machine is like a stamping machine completing a stamping process. The upper punching head moves through a

large cam with a contoured shape and repeats movement in a vertical direction according to a certain rule, whenever a large cam is completed once Circular motion is the cycle of processing a carton. The movement of the two small cams on both sides drives the cardboard to move around on both sides with the paper tongue, and then the paper tongues on both sides are bent and glued. The connection between the lower punch and the frame is based on the adjoining effect of the spring, with longitudinal two-way ribs and transverse two-way ribs to adjust the spacing between the longitudinal bending plate and the transverse bending plate and adjusting the size of the manufacturing process. The same specifications of the carton, the following figure is the main structure of the device.

The specific mechanism is as follows: 1 large cam 2 pulley 3 motor spindle 4 connecting rod 5 upper punch 6 lower punch 7 Small cams 8 Bevel gears 9 Lateral bending plates 10 Bidirectional thread adjustment rods 11 Triangle 12 Longitudinal bending plates 13 Pulleys 14 Paper tongue bends 15 Gear racks 16 Spring 17 Tensioner 18 belts

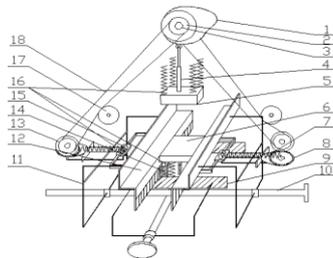


Fig 1. The composition of the main movement of the paste carton forming machine body  
The broad application of the rotary kilns in a variety of industrial branches for thermal processing of residual materials with a different origin and mostly for fire treatment of hazardous wastes [2-3]. The rotary kilns were used as rotary dryer to remove moisture and water from solid substances, primarily by introducing hot gases into a cylinder, it acts as a conveying device and stirrer.

### 3. CAM LINK MECHANISM

Two pulleys can be connected to the main drive shaft of the motor, relying on two pulleys sharing a common central axis, and two pulleys symmetrically distributed on both sides of the large cam. The large cam rotates at a 360-degree angle every circular movement, and it completes the stamping process with the link motion and the upper punch head reciprocating in the vertical direction. The power of the paper tongue bending device on both sides of the big cam is on both sides of the large cam. The belt pulley transmits power as the belt moves, as shown in the general outline shape of the large cam.

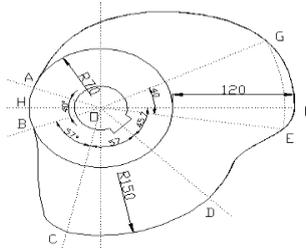


Fig 2. Large cam profile shape

The overall structure of the molding machine is the structure of the large cam. The process of stamping the whole body is completed in two steps. The first step is to bend the cardboard on both sides of the cardboard with the paper tongue, and then the cardboard stays. The upper punch head moves to a predetermined place, and the four paper tongues on both sides of the paper board are bent; in the second step, the remaining two sides of the first step are bent, and then the first step of the glued paper is the tongue is glued.

The inside of the box has a short guide rail on which is fixed the lower part of the mechanism of the paper tongue bent plate. This fixing is based on the connection of the angle iron, and the whole of this mechanism is fixed in the vertical bending. On the board, it is also a fixed connection by angle iron.

The performance of this paste-type heaven and earth cover carton forming machine has high strength, high precision, and high utilization rate. This machine is a prerequisite for simplifying, generalizing, mechanizing, and automating ordinary and cumbersome work. Improve the production efficiency of packaging cartons, reduce the labor intensity of workers, save raw materials, and greatly improve people's labor environment and noise.

#### 4. CONCLUSION

The machine that produces the packaging carton has a very important manifestation in the actual production run, as follows:

- (1) In the production, the cost of producing packaging cartons can be reduced, the quality of the articles being transported can be protected, and the loss caused by the crushing and damage of the goods during transportation can be reduced to a great extent.
- (2) Companies that produce packaging cartons can produce more products in the same time and achieve more objective economic benefits.
- (3) The cartons can be continuously adjusted and changed in the production according to the designer's size requirements.
- (4) The working performance of the machine is good, and it is stable and reliable, so that products with quality assurance are produced and the noise generated is small, so that it can provide a comfortable working environment for the staff.

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