Technical Field

The present invention relates to an electric drive spring device, particularly a system where the precise control of the spring's retraction position can be achieved through a computer, allowing it to perform linear reciprocating motion.

Background Technology

Springs are an extremely common tool and are very cost-effective propulsion devices.

Scenario 1: There is a rectangular box with flyers placed diagonally inside. When someone takes away the flyers at the front, it becomes difficult to retrieve the ones inside the box. At this time, we can consider adding a spring inside the box. However, when there are many flyers at the beginning, the spring is in a compressed state with a strong elastic force, which may push all the flyers out at once. If a spring with less elastic force is chosen, it may lack the necessary force to push the remaining flyers into an easily accessible position later on. This makes us feel troubled when choosing the right spring. Switching to other technologies may encounter problems such as unsuitable scenarios, high cost, or insufficient precision to dispense one flyer at a time.

Scenario 2: For traditional small pushrod machines, there are two disadvantages. First, they are expensive to manufacture; a small pushrod machine that extends 1cm costs about 100 yuan. Second, their performance is relatively low; compared to spring thrusters, the thrust difference can be several times or even dozens of times at the same cost.

Scenario 3: The common problem with reciprocating motors is that they are too large; to push out 10 centimeters, you need to reserve at least 30 centimeters of space, and they also produce quite a bit of noise.

Invention Content

The present invention provides a system for precise control of spring expansion and contraction using a microcomputer. To achieve the above objectives, the present invention adopts the following technical solutions:

1. Spring, used to generate propulsive force, select springs of different lengths, thicknesses, and materials according to the required thrust.

2. Wire rope buckle, used to bind wire ropes.

3. Wire rope collection device, used to wind wire ropes.

4. Motor, used to drive the rotation of the wire rope collection device.

5. Barrier, used to fix the spring, safety device, and wire rope buckle. The upper barrier is also used for boosting, while the lower barrier can be used to fix the device in place.

6. Wire rope, used to control the position of the barrier. When the elastic force is too large, metal wire or metal chain should be used for the wire rope.

7. Telescopic tube, used to prevent the spring from deflecting due to uneven force when it is compressed, ensuring that the spring remains as vertical as possible.

8. Microcomputer, used to precisely control the maximum position of the spring.