

Jan. 20, 1970

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3,490,172

ELECTRICALLY OPERATED TOY WORM

Filed March 3, 1967

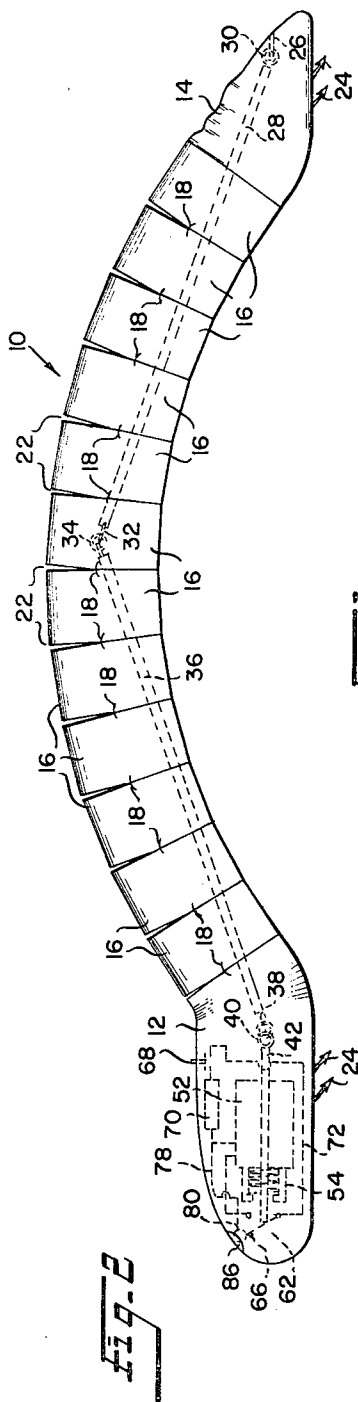
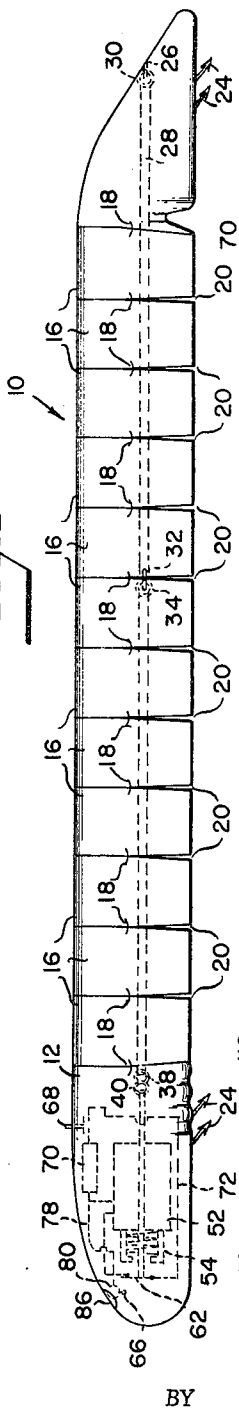


Fig. 2



BY

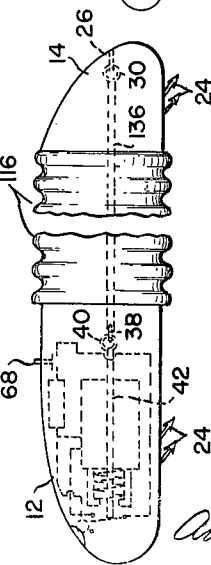


Fig. 4

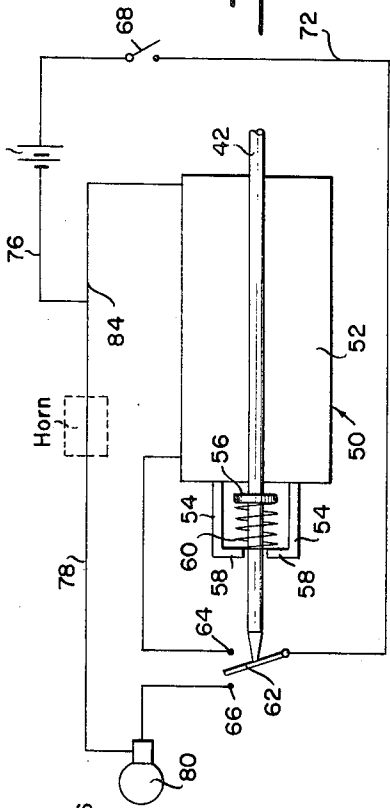


Fig. 3

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ELECTRICALLY OPERATED TOY WORM

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Filed Mar. 3, 1967, Ser. No. 620,466

Int. Cl. A63h 11/00, 33/26

U.S. Cl. 46—226

11 Claims

ABSTRACT OF THE DISCLOSURE

An electromechanical toy having forward and rearward portions connected to each other, electromechanical motive means located in one of the portions for reciprocating a movable portion relative to a stationary portion, whereby the toy will move in a "jerky" manner along a surface. Lights for the eyes and/or a horn can be connected to alternately operate with the motive means.

The invention relates to a toy and more particularly to an electro-mechanical toy in the form of a worm. It is an object of the instant invention to provide an electro-mechanical toy which will move across the floor under its own power.

It is another object of the invention to provide an electro-mechanical toy which will move linearly with eye-catching appeal to children.

Still another object of the invention is to provide a toy which will move in an interrupted or "jerking" fashion.

It is still another object to provide a toy which will move intermittently across the floor, and at the same time will include light means which will intermittently turn on and off.

In one form of the invention an electro-mechanical toy having a forward portion and a rearward portion is moved across the room by an electro-mechanical motive means located in one of the portions. There is provided means for connecting the electro-mechanical motive means to the other portion. The motive means includes means for reciprocating one of the portions relative to the other.

The forward and rearward portions can be connected by various means, including hinged segmental sections or a bellows arrangement.

In the preferred embodiment of the invention, the motive means is in the form of a reciprocating solenoid or motor which alternately connects and disconnects a source of electrical potential to the solenoid or reciprocating motor and to a light source.

Other objects of the present invention will appear more fully from the following description and accompanying drawings wherein:

FIGURE 1 is a side elevation view of the toy in its extended position;

FIGURE 2 is a side elevation view of the toy in its contracted position;

FIGURE 3 is a detail of the electrical operating means of the invention;

FIGURE 4 is a side elevation view of another form of the invention.

Referring now to the drawings, particularly FIGURES 1 and 2, an electro-mechanical toy in the form of a worm is seen generally at 10. The toy includes a forward portion 12 and a rearward portion 14 which are connected by a plurality of segments 16. The segments may be connected to one another by suitable hinging means such as threads 18.

As seen in FIGURE 1, adjoining segments are separated from one another by tapering the adjacent members to form notches 20. When the toy is contracted as seen in FIGURE 2 the notches will form themselves on the top as seen at 22.

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The forward and rearward sections are each provided with rearwardly directed teeth 24. As will be described later, these teeth cooperate with the floor to maintain the appropriate portion stationary during the forward movement.

The rearward portion 14 is provided on its interior surface with a ring type member 26. Connected to the ring 26 is a rear rod 28 having a complementary ring 30 on the end thereof. The central end of rod 28 has a ring 32 cooperating with a ring 34 on a forward rod 36. In turn, forward rod 36 has a ring 38 which cooperates with a ring 40 on reciprocating member 42.

The electrical circuitry will best be seen in FIGURE 3 wherein a reciprocating motor 50 includes a coil 52 while the movable armature is in the form of a rod 42. The coil 52 has a pair of hooked bracket members 54 on the forward end thereof. The reciprocating rod 42 includes a flange member 56. Connected between the flange 56 and a pair of intumed hooks 58 on the bracket member 54 is positioned a spring 60.

At the end of rod 42 is located a movable contact member 62 which is movable between a pair of stationary contacts 64 and 66.

Also included is an on-off switch 68 which connects a battery 70 to movable contact 62 through line 72. Contact 64 connects to one portion of the coil through line 74. The negative side of the battery is connected through lines 76 and 78 to a lamp 80, which in turn is connected to contact 66 through line 82. The negative side of the battery is also connected through line 76 and line 84 to the other terminal on the reciprocating motor.

The light 80 may be positioned adjacent a simulated eye 86 on the forward portion of the worm.

OPERATION

When the toy is in the position seen in FIGURE 1, the spring 60 will have pushed the rod 42 to its rearward position and movable contact 62 will engage fixed contact 64. When the switch 68 is closed, current will flow through line 72, switch 62, contact 64 and through line 74 to the coil 52 of the reciprocating motor 50. The current will then flow through line 84 and line 76 back to the battery 70. This will energize the solenoid core and pull the rod 42 with sufficient force to overcome the bias on spring 60. This will de-energize the solenoid and make contact with stationary contact 66. It will be seen that current will then flow from battery 70, through line 72, movable contact 62, stationary contact 66, through lamp 80 and lines 76 and 78 to the battery 70. As the rod 42 moves to its forward position, the pull on rods 36 and 28 will move the rear portion of the toy forward. Members 24 on the front portion will hold the front portion in its forward position, thus requiring the rear portion to move forward.

Since the solenoid is de-energized, the spring 60 will pull the rod toward the rear. The teeth on the rear portion 14 will hold the rear stationary, and the forward portion will move forward.

It will be seen that the reciprocating motor or solenoid 50 will alternately move the toy forward and alternately energize the light 80 in the eyes of the worm. In this fashion the toy will move forward in a "jerky" manner, and at the same time its eyes will light up and then turn off.

EMBODIMENT OF FIGURE 4

It will be seen that in the embodiment of FIGURE 4, the circuitry and construction of the forward and rearward portions are substantially identical. In place of the hinged segmental members there is located a flexible bellows 116. In place of the hinged rods 28 and 36 there is one long rod 136 connected to the reciprocating rod 42 in the reciprocating motor.

In operation, as the reciprocating motor pulls forward, the forward teeth 24 will hold the forward portion 12 in its place and pull the rearward portion 14 forward. When the rear portion moves forward, the bellows will contract. As the rod 42 is pushed out, the rear teeth 24 on the rear portion 14 hold the rear portion in its place and the front portion will slide forward. In the same manner as discussed above, the toy will move forward alternately and the light will go on and off in alternating fashion. Rather than having the back of the toy hunch up as seen in FIGURE 2, the movement will be merely an expansion and contracting of the flexible bellows.

As can be seen in FIGURE 3, a horn or buzzer can be placed in the circuit either in series with the lamp as shown or in series with the solenoid. In this manner the horn or buzzer can be made to go on either at the same time as the light goes on or to go on when the light is out.

As will be appreciated, by the specific movement and the flashing lights, the toy will have great appeal to small children.

While the invention has been described it will be understood that it is capable of further modifications and this application is intended to cover any variations, uses, or adaptations of the invention following in general, the principles of the invention and including such departures from the present disclosure as come within knowledge or customary practice in the art to which the invention pertains, and as may be applied to the essential features hereinbefore set forth and fall within the scope of the invention or the limits of the appended claims.

What is claimed is:

1. An electromechanical toy comprising:

- (a) a forward portion,
- (b) a rearward portion connected to said forward portion,
- (c) electromechanical motive means in one of said portions,
- (d) means connecting said electromechanical motive means to the other of said portions,
- (e) said electromechanical motive means including means for reciprocating said one portion relative to said other portion,
- (f) said electromechanical motive means including a reciprocating motor attached to said connecting means, and
- (g) said motor including means for biasing said connecting means in the direction of said other means.

2. An electromechanical toy as defined in claim 1 including a source of electrical potential connected to said motor.

3. An electromechanical toy as defined in claim 2 including a first switch, said first switch operated by said connecting means alternately connecting and disconnecting said motor to said source of electrical potential.

4. An electromechanical toy as defined in claim 1 wherein one of said portions is connected to the other of said portions by a plurality of segments.

5. An electromechanical toy as defined in claim 4 wherein each of said segments is pivotally connected to adjacent ones of said segments.

6. An electromechanical toy as defined in claim 1 wherein said connecting means is pivotally connected to said electromechanical motive means.

7. An electromechanical toy as defined in claim 1 wherein said connecting means is reciprocally connected to said motive means.

8. An electromechanical toy as defined in claim 1

wherein one of said portions is connected to the other of said portions by flexible bellows.

9. An electromechanical toy as defined in claim 1 wherein at least one of said portions has at least one rearwardly projecting toothlike foot.

10. An electromechanical toy comprising:

- (a) a forward portion,
- (b) a rearward portion connected to said forward portion,
- (c) electromechanical motive means in one of said portions,
- (d) means connecting said electromechanical motive means to the other of said portions,
- (e) said electromechanical motive means including means for reciprocating said one portion relative to said other portion,
- (f) said electromechanical motive means including a motor attached to said connecting means,
- (g) a source of electrical potential connected to said motor,
- (h) a first switch, said first switch operated by said connecting means alternately connecting and disconnecting said motor to said source of electrical potential, and
- (i) a light, said first switch also alternately connecting and disconnecting said light to said source of electrical potential.

11. An electromechanical toy comprising:

- (a) a forward portion,
- (b) a rearward portion connected to said forward portion,
- (c) electromechanical motive means in one of said portions,
- (d) means connecting said electromechanical motive means to the other of said portions,
- (e) said electromechanical motive means including means for reciprocating said one portion relative to said other portion,
- (f) said electromechanical motive means including a motor attached to said connecting means,
- (g) a source of electrical potential connected to said motor,
- (h) a first switch, said first switch operated by said connecting means alternately connecting and disconnecting said motor to said source of electrical potential, and
- (i) an electrical sounding device, said first switch alternately connecting and disconnecting said sounding device to said source of electrical potential.

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U.S. Cl. X.R.

46—124, 227, 235, 243, 247