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McKittrick, Jr. et al.

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[54] **ANIMATED TOY**

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[73] Assignee: **Mattel, Inc.**, Hawthorne, Calif.

[21] Appl. No.: **752,861**

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[51] **Int. Cl.**[4] **A63H 3/22**

[52] **U.S. Cl.** **446/356**; 180/8.6

[58] **Field of Search** 446/356, 355, 354, 353, 446/352, 293, 294, 292, 278, 156, 157, 158; 180/8.6, 8.3, 8.1, 8.5

[56] **References Cited**

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2,329,564	9/1943	Thomas	446/158
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3,484,988	12/1969	Robbins	446/355
3,559,336	2/1971	Nozaki	446/356
4,216,612	8/1980	Erickson et al.	446/290
4,301,615	11/1981	Ikeda	446/293
4,372,078	2/1983	Spring	446/353

Primary Examiner—Mickey Yu

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[57] **ABSTRACT**

An animated toy having a housing in the form of a body of a spider like insect with leg coupling members rotatably coupled thereto through ball and socket arrangements, with extensions thereof engaging cam follower members. The drive mechanism includes dual sided cam members with each cam having first and second cam portions for coaction with predetermined portions of the opening in a cam follower member to provide a modified "D" shape movement to the leg extensions, with the opposite cam portions on a given cam, and the position from cam to cam being mechanically phased to realistically simulate the walking movement of a spider like insect.

16 Claims, 6 Drawing Figures

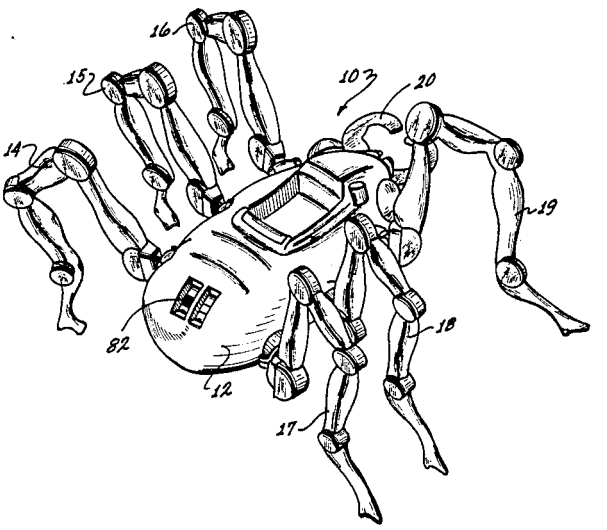


Fig. 1

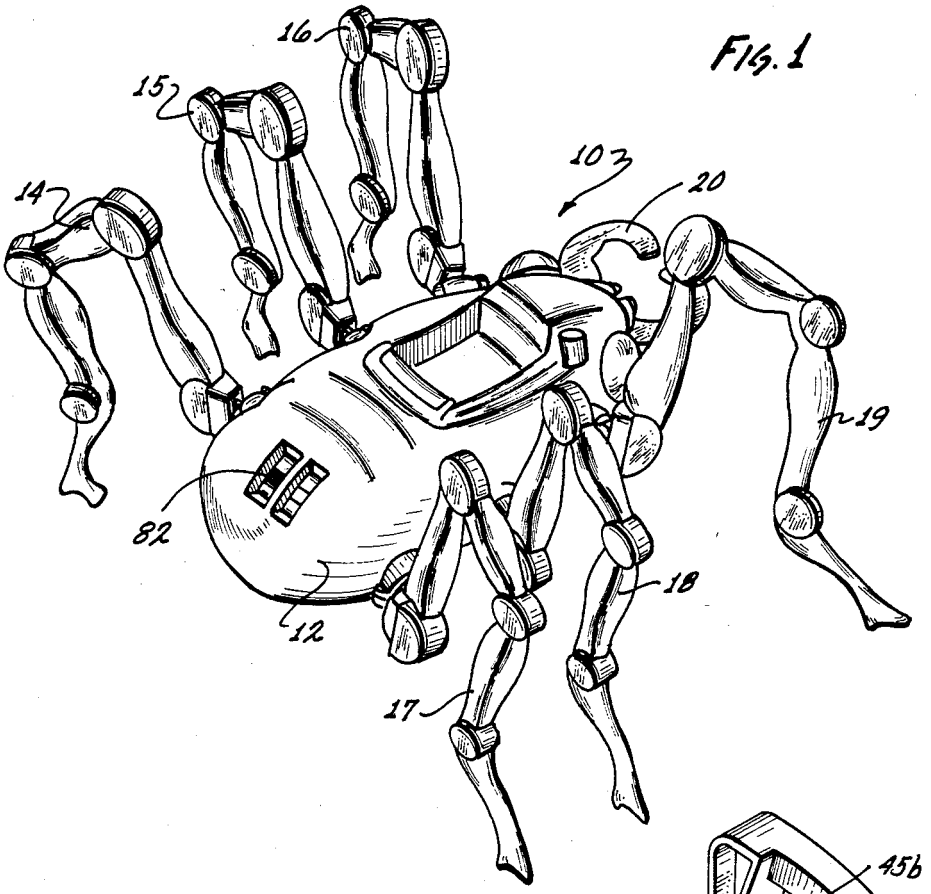

16
15
14
10
20
19
82
12
18
17

Fig. 3

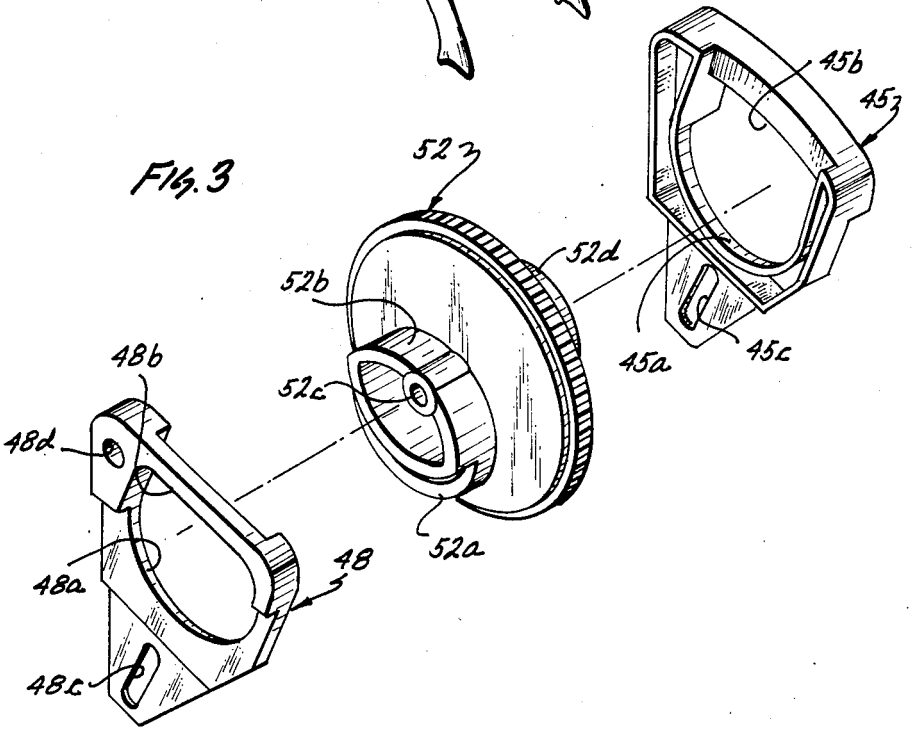
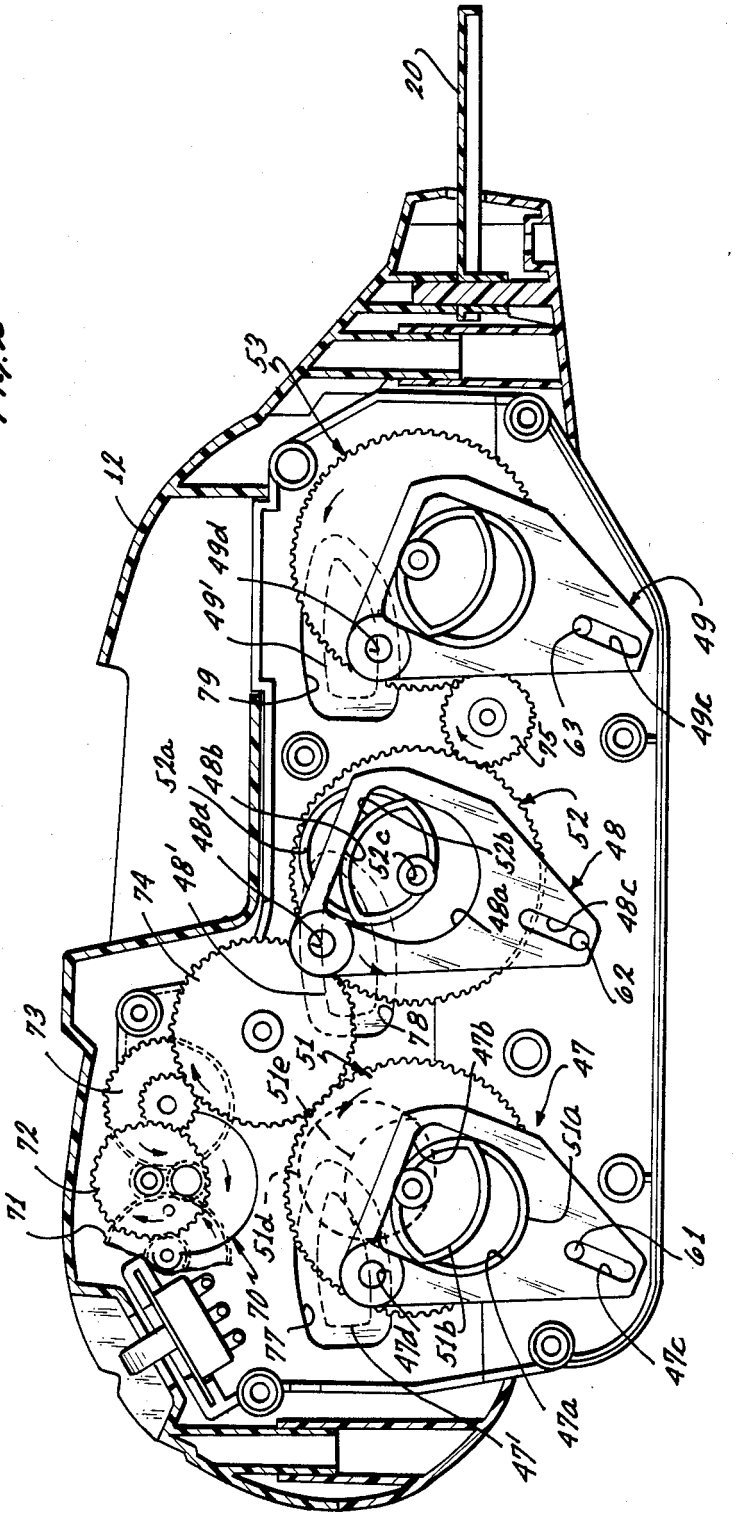

45b
45
52
52d
52b
48b
52c
48d
48
48a
52a
45a
45c
48c

Fig. 2


20
53
12
49d
49'
49
79
49c
63
75
52a
48b
48d
52
52c
52b
48
48'
74
48a
48c
62
73
78
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51d
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47c
47a
47'

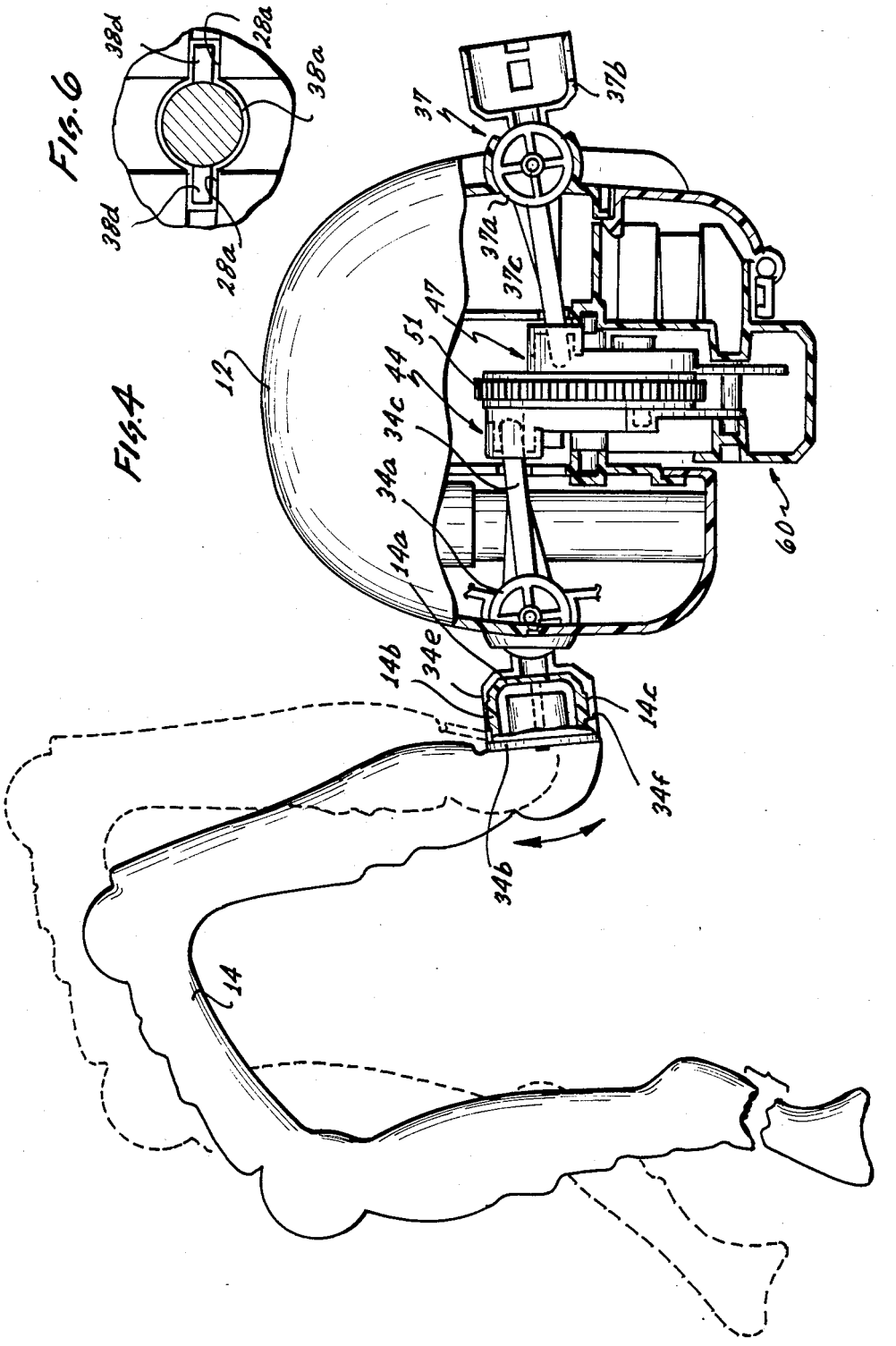
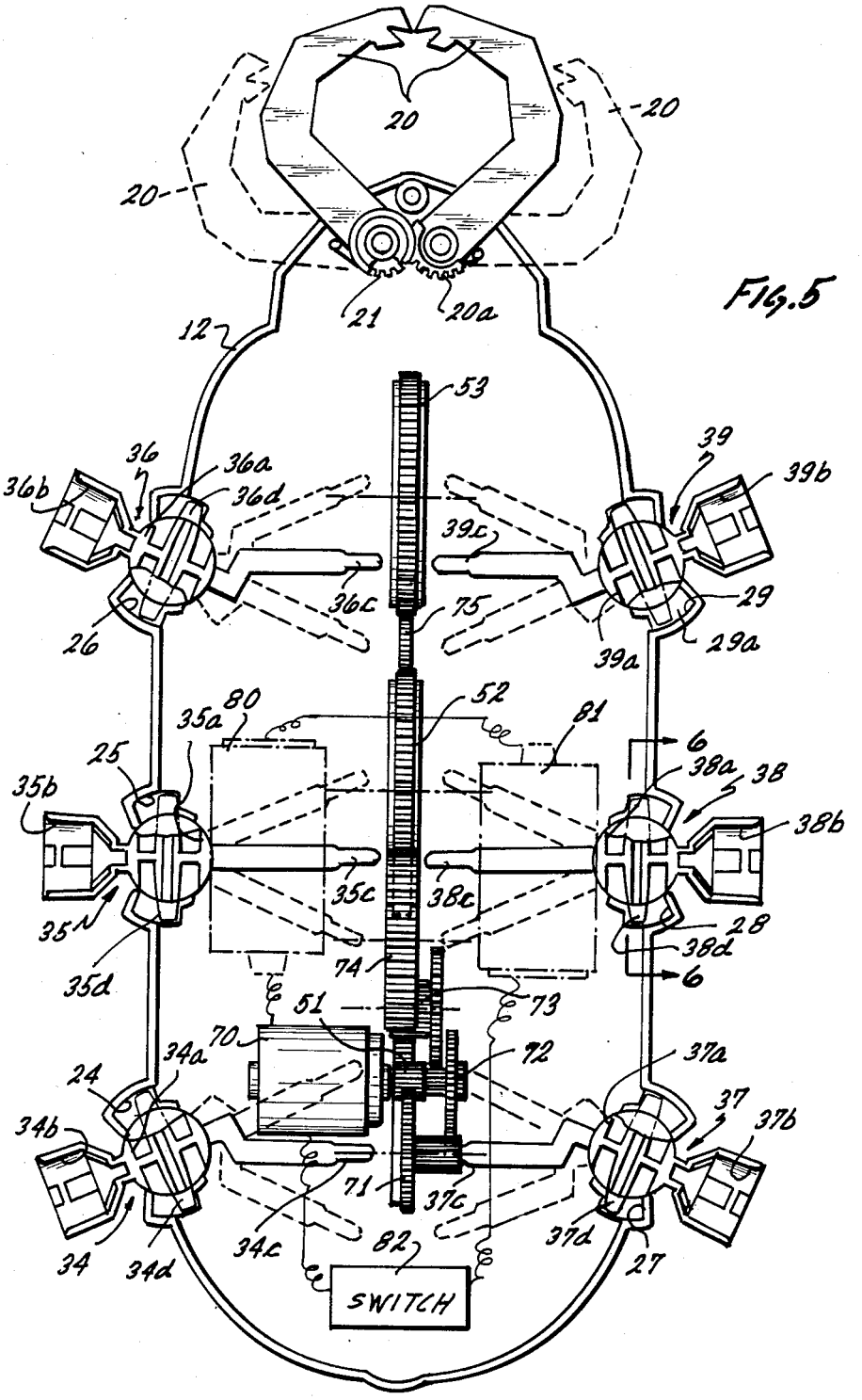


Fig. 6
38d
28a
38a
38d
28a
Fig. 4
12
37
37b
37a
37c
47
51
44
34c
34a
14a
60
14b
34e
14c
34f
34b
14


20
20
20
21
20a
12
53
36
36a
36b
36d
36c
26
39
39b
39c
75
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29a
39a
80
35a
52
81
25
35b
35
35d
6
38a
38
38b
35c
38c
28
38d
74
51
73
70
72
34a
24
37a
37
37b
34b
71
37c
34c
82
37d
27
34
34d
SWITCH

Fig. 5

ANIMATED TOY

BACKGROUND OF THE INVENTION

The background of the invention will be discussed in two parts:

1. Field of the Invention

This invention relates to animated toys, and more particularly to animated toys supported by appendages performing a walking motion.

2. Description of the Prior Art

Toys which move or have animated aspects have been a source of amusement for decades, particularly the types of toys in the form of vehicles, humans, animals or insects with some form of propulsion means.

One such early toy is shown and described in U.S. Pat. No. 538,007, issued Apr. 23, 1895, to Adam, for a "Mechanical Toy", in which a housing in the form of an insect or animal, is provided with spring-motor powered mechanically actuated appendages.

A mechanism for simulating walking movement is shown and described in U.S. Pat. No. 912,108, entitled "Mechanical Movement", issued to Gaskill, on Feb. 9, 1909, the mechanism including forked cranks for controlling movement of the pivot axes of the leg-like members along a path dictated by a cam member.

U.S. Pat. No. 1,511,928, entitled "Striding Motion Driving Gear for Motor Vehicles", was issued to Zboril, on Oct. 14, 1924, and illustrates a mechanism for performing a walking or striding motion, the mechanism being configured for replacement of the wheels on a motor vehicle, and constructed for enabling the rotary motion of the driving crank to be converted into a horizontal and practically uniform motion of the ends of the levers which form the feet.

U.S. Pat. No. 1,782,477, entitled "Animated Toy", issued to Price, on Nov. 25, 1930, such patent disclosing a housing in the form of an animal with four leg members pivotally connected thereto and operated by a spring-powered motor through a crank and linkages.

Another such animated toy is shown and described in U.S. Pat. No. 1,986,446, entitled "Walking Figure", issued to Powleson, on Jan. 1, 1935, the toy being in the form of a human having a pair of leg members with the upper portions thereof slotted and driven by eccentric members within the slots driven by a gear mechanism.

Another such animated toy is shown in U.S. Pat. No. 2,329,564, issued Sept. 14, 1943, to Thomas, for a "Toy Crocodile", the patent disclosing a toy intended for partial use in water with the head and tail thereof synchronized for movement with cam actuated leg drive means.

U.S. Pat. No. 2,366,576, issued to Thomas, on Jan. 2, 1945, entitled "Animated Figure", the figure being in the form of a giraffe with the rear legs fixed relative to the body and the front legs being articulated and cam-driven to propel the figure.

U.S. Pat. No. 2,827,735, entitled "Animated Toy", issued to Grimm, Jr., on Mar. 25, 1958, and discloses a insect-like toy having a plurality of inverted V-shaped legs, the inner ends of the legs being coupled to crank-driven reciprocating bar members for propelling the same.

A "Motor Driven Toy Bug" is shown and described in U.S. Pat. No. 3,226,878, issued to Glass et al, on Jan. 4, 1966. In this patent, the toy is configured to resemble the shape of a bug with three legs on each side connected in angular relation to common rotating hubs,

with a mechanism provided for changing the speed of movement for a period of time in response to actuation of a lever.

Another animated toy is shown and described in U.S. Pat. No. 3,331,463, issued July 18, 1967, to Kramer, the patent being entitled "Motor Operated Ambulatory Vehicle", the vehicle being in the form of an insect with a plurality of leg members pivotally coupled and spring biased relative to the housing with cam followers on the inner ends of the legs. A pair of cam shafts coact with individual cam followers for manipulating the legs.

A "Walking Doll With Ambulatory Traction-Drive Mechanism" is shown and described in U.S. Pat. No. 3,484,988, issued Dec. 23, 1969 to Robbins, the doll including a drive mechanism in the lower part of the torso with a crank coacting with slots in the upper part of leg drive members with the foot portions each having a traction mechanism operating through an opening in the sole thereof.

U.S. Pat. No. 3,559,336, issued Feb. 2, 1971 to Nozaki for "Toy Having Capacitance Switch", discloses a figure toy in the form of an animated dog with switch means operating an electric motor to drive the toy, with the switch being operable in response to proximity of a human.

Another animated toy is shown and described in U.S. Pat. No. 4,216,612, issued Aug. 12, 1980 to Erickson et al, for "Toy Vehicle", the toy being wheel driven and having appendages spring coupled to the body portion for simulating movement on engaging the supporting surface and being released on overcoming of the friction of the surface.

Another such device is shown and decsribed in U.S. Pat. No. 4,301,615, issued Nov. 24, 1981 to Ikeda for "Toy Having First Member Capable of Going From a First Position to a Second Position and Automatically Returning to the First Position", the device being wheel driven and having the head portion thereof operable between an extended and a retracted position.

An animated device is shown and described in U.S. Pat. No. 4,372,078, issued Feb. 8, 1983, to Spring for "Toy Movable by Alternately Relocating Individual Members of a Pair of Body Parts", the toy being in the form of a pair of shoes coupled together with a crank mechanism actuated by a spring motor.

It is an object of the present invention to provide a new and improved animated toy.

It is another object of the present invention to provide a new and improved animated toy simulating a insect.

It is a further object of the present invention to provide a new and improved animated toy having removable appendages.

It is still another object of the present invention to provide a new and improved animated toy having appendages rotatably coupled to the body and operated by two-sided cam members.

It is a further object of the present invention to provide a new and improved motor operated animated toy in the form of an insect with a drive mechanism realistically simulating the walking motion of a six-legged insect.

SUMMARY OF THE INVENTION

The foregoing and other objects are accomplished by providing an animated toy having a housing in the form of a body of a insect with leg coupling members rotat-

ably coupled thereto through ball and socket arrangements, with extensions thereof engaging cam follower members. The drive mechanism includes dual sided cam members with each cam having first and second cam portions for coaction with predetermined portions of the opening in a cam follower member to provide a modified "D" shape movement to the leg extensions, with the opposite cam portions on a given cam, and the position from cam to cam being mechanically phased to realistically simulate the walking movement of a spider-type insect.

Other objects, features and advantages of the invention will become apparent from a reading of the specification, when taken in conjunction with the drawings, in which like reference numerals refer to like elements in the several views.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of the animated toy in accordance with the present invention;

FIG. **2** is a side view, partially in cross-section of the body of the animated toy of FIG. **1** to illustrate the drive mechanism therein;

FIG. **3** is an exploded view of the cam member and cam follower members used in the drive mechanism of the toy of FIG. **1**;

FIG. **4** is a rear view of the toy of FIG. **1**, partially broken away and partially in cross-section to illustrate the coupling of the leg members to the drive mechanism of FIG. **2**;

FIG. **5** is a top plan view of the animated toy of FIG. **1**, partially broken away and partially in cross-section, with certain components omitted for clarity, to depict the electrical drive mechanism and the motion of the leg members; and

FIG. **6** is a cross-sectional view taken generally along line **6**—**6** of FIG. **5** illustrating the ball and socket connection of the leg coupling members.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, and particularly to FIG. **1**, there is shown an animated toy, generally designated **10**, in the form of an insect, having a main body **12**, with one set of leg members **14**–**16** on one side thereof and a second set of leg members **17**–**19**, on the other side thereof, the leg members **14**–**19** being coupled to said housing for movement relative thereto for propelling the toy **10** under the force of a drive mechanism within the body **12** thereof. As can be seen the leg members **14**–**19** are of an inverted generally U-shaped configuration to simulate the configuration of insect legs. At the head end of the toy **10**, there is a pair of mandible members **20**, which as will be hereafter described, are pivotably coupled to the body **10** and spring biased to enable retention of some other device therein, such as a figure toy (not shown).

Referring to FIGS. **2** through **5**, the details pertaining to the drive mechanism and the interconnection of the leg members **14**–**19** therewith will now be described. As depicted in FIGS. **2**, **4** and **5**, the body **10** is a generally hollow housing with components assembled therein. As shown in FIG. **5**, the outer surface of the body **12** is provided with a plurality of socket shaped openings **24**–**29**, which engage ball-shaped portions **34***a*–**39***a*, respectively, of leg coupling members **34**–**39**, respectively. Each of the ball-shaped portions **34***a*–**39***a* is provided with a diametrically extending integrally formed axle portion **34***d*–**39***d*, with each of the socket openings **24**–**29** of the body **12** having a generally planar generally horizontal shoulder portion **28***a*, **29***a*, etc. (See FIGS. **5** and **6**) about the periphery thereof on which this axle portion rests. In FIG. **5**, the ball portion **39***a* of leg coupling member **39** has been cut away to show the horizontal shoulder **29***a* on which the axle projection **39***d* rides, while FIG. **6** is a cross-section through leg coupling member **38** showing the upper and lower shoulders **28***a* which effectively preclude the leg member **38** from twisting, thus maintaining the leg members generally perpendicular to the surface at all times.

By reference to FIG. **5**, each of the axle projections pivots in a horizontal plane about an axis perpendicular to the plane of the drawing through an angle limited by the angular projections of the body **10** adjacent the opening **24**–**29** through which the leg coupling member **34**–**39** extends. Similarly, by reference to FIG. **4**, the axle projections **34***d* and **37***d* establish a horizontal axis for pivoting of the leg coupling members **34** and **37** about the axis drawn perpendicular to the plane of the sheet through the center of the axle projections **34***d* and **37***d*, while enabling up and down motion of the leg coupling members **34** and **37**. This two axis constraint configuration enables compound motion of the leg members while the outer ends of leg members **14** through **19** are in depending relation to the body **12** at all times for supporting the weight of the body **12** and for enabling operation of the toy **10**.

Each of the leg coupling members **34**–**39** includes the ball-shaped portion **34***a*–**39***a*, respectively, an outwardly extending cup-shaped leg receiving portion **34***b*–**39***b*, respectively, and an inwardly extending cam follower extension arm portion **34***c*–**39***c*, respectively. As shown in FIG. **5**, there are six such coupling members, arranged in oppositely disposed pairs with the forward and rearward pairs having the extension arms thereof offset and angularly disposed for coaction with the cam follower members **44**–**49** (See FIG. **2**). Each of the leg receiving portions **34***b*–**39***b* is provided with oppositely disposed upper and lower slots for interconnection with oppositely disposed mating tangs formed in the connecting ends of the leg members. This interconnection is exemplified in FIG. **4**, wherein a leg member **14** has the connecting end **14***a* with tangs **14***b* and **14***c* engaging slots **34***c* and **34***f* respectively formed in the leg receiving portion **34***b*. For assembly, the leg member **14** is positioned in the dotted line position with the end **14***a* thereof in partial engagement within the leg receiving portion **34***b* of leg coupling member **34**. The leg member **14** is then rotated downwardly with slight pressure toward the body **12**, until the upper and lower tangs **14***b* and **14***c* are held captive by engagement with the slots **34***e* and **34***f*, thus retaining the leg member **14** within the leg coupling member **34**.

The primary driving components are illustrated in FIG. **3**, which depicts a first cam follower member **45** and a second cam follower member **48** positioned on either side of a double sided cam member **52** which has the circular perpihery thereof provided with gear teeth for driving by the mechanism to be described hereafter. Each side of the cam member is provided with cam means including first and second cam portions **52***a* and **52***b*, the cam portion **52***a* being formed as a protruding circular shoulder with the central aperture **52***c* of the cam member **52** positioned on the circumference of the cam portion **52***a*. The cam portion **52***b* is a shoulder which extends out from the plane of the side of the cam

member an additional distance, with cam portion 52*b* being in the form of an ellipse. The opposite surface of the cam member 52 has identically configured cam portions 52*d* and 52*e*, which are angularly displaced from the cam portions 52*a* and 52*b* through an angle of approximately 180 degrees, that is, when the circular cam lobe of cam portion 52*a* on one side is at the top of the cam member 52, the corresponding circular cam lobe of cam portion 52*e* on the opposite surface would be at the bottom.

For coaction with these cam portions, each of the cam follower members is identically configured, and by reference to cam follower member 48, an enlarged opening is provided with first and second cam follower edges 48*a* and 48*b* for separate coaction with the cam portions 52*a* and 52*b*, respectively. The cam follower edge 48*a* is an arc of a diameter generally equal to the diameter of the circular cam portion 52*a*, and the configuration of the cam follower member 48 is such that, as assembled, the surface thereof adjacent the edge 48*a* is in generally sliding abutting relation with the adjacent surface of the cam member 52 with the cam portions thereof extending into the cam follower opening. The second cam follower edge portion 48*b* is offset outwardly from the side of the cam member 52 for coaction only with the second cam portion 52*b*. The second cam follower edge portion 48*b* is an arc of a diameter much greater than the arc diameter of the first cam follower edge portion 48*a*.

The lower end of the cam follower member 48 is provided with an elongate slot 48*c* which engages a stationary projection 62 (See FIG. 2) for assisting in controlling the motion of the cam follower member 48, as well as the ultimate motion of the driven leg member 18, as will be described. The length of the slot 48*c* lies in line with a diameter extending through the circle of the arc 48*a*. The innermost end of the extension arm 38*c* of the leg coupling member 38 is received in the socket opening 48*d* of the cam follower member 48, this socket opening 48*d* being located adjacent a point of intersection of the two arcs defining the two cam follower portions 48*a* and 48*b*.

Referring now primarily to FIG. 2, along with FIGS. 4 and 5, the drive mechanism and the interconnection to the leg members 14–19 will be described. To facilitate assembly, the drive mechanism is contained within a generally hollow housing 60, into which the majority of the various gears and components may be assembled prior to positioning and securing within the body 12. The mechanism is operated by an electric motor 70, the pinion gear of which drives a first cluster gear member 71, which in turn drives a second cluster gear member 72, which in turn drives a third cluster gear member 73, which drives a large diameter idler gear member 74. The cluster gear members 71–73 each include a large diameter outer gear portion and a small diameter pinion gear portion, with the three gears providing gear reduction form the speed of the motor 70 to the speed of rotation of the idler gear member 74.

The idler gear member 74 is in meshing engagement with the toothed periphery of cam members 51 and 52 to simultaneously drive both cam members in the same direction at the same speed. The various directions of rotation of the gears and cams relative to the motor 70 are indicated by arrows thereon. Each of the gears and cam members is rotatably supported within the mechanism housing 60 by suitable axles or shaft members supported between opposing vertical surfaces of the housing 60 in a conventional manner. The third cam member 53 is driven by a small diameter idler gear 75 in meshing engagement with the geared periphery of both cam members 52 and 53, thus driving cam member 53 in the same direction of rotation as the other two cam members 51 and 52, this likewise being indicated by an arrow thereon.

Within the housing 60, each of the cam follower members 47–49 (as well as corresponding cam follower members for the opposite leg members) is supported as shown in FIG. 2, with axle like projections 61–63 extending between opposing vertical surfaces of the housing 60 for passage through slots 47*c*, 48*c* and 49*c* of the cam follower members 47–49, respectively. As will be described, the length of the slots 47*c*, 48*c* and 49*c* coacting with the projections 61–63 serves to limit vertical travel of the cam follower members 47–49 during operation for enabling coaction of the respective cam portion with the respective cam follower edge to define the prescribed path of the extension arm of the respective leg coupling member driven thereby. Although not shown, it is to be understood that the cam follower members associated with the opposite cam portions of the cam members 51–53 will have the slots thereof engaging the same projections 61–63. Correspondingly, when the slot of a cam follower member on one side of the cam is at its uppermost travel relative to the fixed engaging projection 61–63, the slot on the opposite side will be at its lowermost position of travel.

As depicted in FIG. 2, the prescribed paths of movement of the extension arms are illustrated by dotted lines 47', 48' and 49' which correspond to the path of the centers of the socket openings 47*d*, 48*d* and 49*d* of the respective cam follower members 47–49, and it is this path which ultimately determines the action of the leg members 14–19. As previously discussed, the cam portions on opposite sides of a single cam member are mechanically phased to be generally diametrically opposed. Similarly a second mechanical phasing is required, and that is the phase of the cam portions of adjacent cam members relative to each other for driving the a set of legs on one side of the toy 10.

This latter phasing can be seen in FIG. 2, wherein the cam portions 51*a* and 51*b* relative to cam member 51 are in general alignment with the corresponding cam portions 53*a* and 53*b* of cam member 53, while the intervening cam member 52 has the cam portions 52*a* and 52*b* thereof angularly shifted through an angle of approximately 180 degrees relative thereto. As a point of reference with respect to the former phasing of the two sides of the cam members, cam member 51 has thereon a dotted line depiction of the cam portions 51*d* and 51*e* on the opposite side thereof to illustrate the generally diametrically opposed relation thereof to the cam portions 51*a* and 51*b*.

Additionally, although not shown, it is to be understood that the socket openings of all cam follower members will be positioned rearwardly relative to the housing 60, these socket openings receiving the tips of the extension arms 34*c* through 39*c* of the leg coupling members 34–39, respectively, these extension arms 34*c*–39*c* passing through openings formed in the opposing sidewalls of housing 60, such as openings 77–79 shown in FIG. 2.

Prior to a detailed description of the operation, by reference to FIG. 5, the cam portions of the cam members 51–53, and the cam follower members have been eliminated to facilitate description, this figure depicting

the electrical circuitry as well as the forward to rearward positions of the leg coupling members **34–39**. Electrically, the motor **70** is connected in series circuit relation with first and second dry cell batteries **80** and **81** (shown in dotted lines), and in series with a switch **82**, which may be a reversing switch enabling forward and reverse direction rotation of the motor **70**. The mandible members **20** in the forward portion of the body **12** are pivotally coupled with sector gear portions **20***a* at the ends thereof adjacent the pivot connections with a spring member **21** urging the mandibles **20** toward each other as depicted in solid lines. The mandible members **20** may be manually pivoted to the dotted line positions for engagement with and retention of an object, such as a figure toy (not shown).

In operation of the mechanism, in a horizontal plane as depicted in FIG. **4**, the movement or pivoting of the leg coupling members **34–39** about the ball portions **34***a*–**39***a* relative to the fixed socket openings **24–29** is illustrated by the solid and dotted line depictions thereof. By reference to FIG. **3**, the vertical heights and angular positions of the extension arms **34***c* and **37***c* about the ball portions **34***a* and **37***a* relative to the fixed socket openings **24** and **27** is depicted as viewed from the rear, while in FIG. **2**, the side elevational positions of the cam follower members **47–49** are depicted.

By reference to FIG. **2**, as the cam members **51–53** rotate in the direction indicated by the arrows thereon, the leg coupling members **37–39** associated therewith, due to the axle projections **34***d*–**39***d* and the coacting socket configuration, essentially move or pivot the leg members **14–19** thereof along one axis fore and aft, and along a mutually perpendicular axis, up and down to effect compound motion.

As can be seen in FIG. **2**, with cam follower member **47** at its lowest position with slot **47***c* at its lowest position relative to fixed projection **61**, cam follower member **49** is in relatively the same position, with the intervening cam follower member **48** at its uppermost position with the lower end of slot **48***c* thereof at its highest position relative to the fixed projection **62** therein.

With cam member **51** rotating counterclockwise as depicted by the arrow thereon, the cam portion **51***a* is in abutting relation with the cam follower edge **47***a* of cam follower member **47**. As the cam member **51** continues rotation in the same direction, the cam follower member **47** commences a vertical movement until at some point, it is restrained from rising further due to the coaction of the projection **61** within the slot **47***c*. At this point, the cam portion **51***b* will engage the cam follower edge portion **47***b*, at which point the parts will be in the position exemplified by cam member **52** and cam follower member **48**. During this rotation, the inner extreme ends of the engaged extension arms **34***c*–**39***c* of the leg coupling members **34–39** will rotate in a modified reclining D-shaped path as depicted by the dotted lines **47'**, **48'** and **49'**.

At the point illustrated in FIG. **2**, the leg members **14** and **19** associated with cam follower members **47** and **49** will be raised with the leg member **18** associated with cam follower member **48** being lowered and in engagement with the surface on which the toy **10** has been placed. The opposing legs of each pair of legs will be in the opposite position, that is leg members **14**, **16** and **18** will be lowered simultaneously, while leg members **15**, **17** and **19** will be raised simultaneously. When the generally flattened surfaces of the cam portions **51***b*, **52***b* and **53***b* are in engagement with the cam follower portions **47***b*, **48***b* and **49***b*, this position corresponds to the time of contact of the outer end of the respective leg member with the surface, causing the leg member to remain in contact for a greater duration of time during which forward movement of the toy **10** is accomplished, thus providing a more realistic simulation of the movement of a spider like insect.

With the reclining D-shaped movement of the extension arms **34***c*–**39***c* along the dotted line paths **47'**, **48'** and **49'** as depicted in FIG. **2**, the upper generally horizontal, and longer portion of the cycle thereof corresponds to the time duration in which the outer tips of the respective leg members are in contact with the surface and propelling the toy **10** forward (or in reverse, depending on the switch **82** position). Similarly the lower more curved portion of the path corresponds to the time duration in which the respective leg members are elevated and being pivoted in the forward direction for subsequent contact with the surface. The rearward generally vertical portion of the path corresponds to the time during which the respective leg member is being elevated, and with a generally vertical rise, the elevation of the leg member would be generally vertical. Finally, the forward somewhat sloping portion of the path would correspond to the time during which the respective leg member is being lowered into contact with the surface. The resulting action would be that the leg member is being lowered gradually into contact while being pivoted in a rearward direction (assuming the switch **82** is in the forward direction), this compound motion resulting in realistic simulation of the movement of a spider like insect.

While there has been shown and described a preferred embodiment, it is to be understood that various other adaptations and modifications may be made within the spirit and scope of the invention.

We claim:

1. In an animated toy, the combination comprising:

a body member;

a plurality of leg means pivotably coupled to said body member, each of said leg means having an extension thereof within said body member, said leg means and said body member being configured to provide ball and socket means for allowing pivotal movement of said leg means;

a plurality of cam follower means within said body, each of said cam follower means being in engagement with the end of an extension of one of said leg means and each of said cam follower means having first and second cam follower portions;

a drive mechanism; and

a plurality of double sided cam members coupled for rotation by said drive mechanism with each cam on each side having first and second cam portions for coaction with said first and second cam follower portions of an engaging cam follower means for enabling synchronized phased movement of said leg means for enabling propulsion of said toy.

2. The combination according to claim **1** wherein said leg means and said body member are configured for enabling pivoting of said leg means with said leg means in generally depending relation to said body member.

3. The combination according to claim **1** wherein said drive mechanism includes gear and said cam members are gear driven.

4. The combination according to claim **1** wherein there are at least four of said leg means.

5. The combination according to claim 1 wherein said cam members and said cam follower means are configured to provide a reclining generally D-shaped path of pivoting of the engaged end of the extension of said leg means.

6. The combination according to claim 1 wherein said toy is configured in the form of an insect, and there are three pairs of said leg means.

7. The combination according to claim 6 wherein each of said leg means includes a leg coupling member and said leg coupling member and said body member are configured to provide said ball and socket means.

8. The combination according to claim 7 wherein each of said cam members has each side thereof formed to provide a first cam portion in the form of a first shoulder of a generally circular configuration with the circumference of said shoulder on the center of rotation of said cam member, and a second cam portion in the form of a second shoulder extending out from said first shoulder with the periphery thereof generally elliptical.

9. The combination according to claim 8 wherein said cam follower means includes an opening for receiving said cam portions therein, with said first and second cam follower portions formed as offset first and second cam follower edges in said opening to provide coaction between said first cam follower edge and said first shoulder, and coaction between said second cam follower edge and said second shoulder.

10. In an animated toy, the combination comprising:

a generally hollow body member;

a pluraliy of pairs of leg means pivotably coupled to said body member, each of said leg means having an extension thereof within said body member;

a plurality of cam follower means within said body, each of said cam follower means being in engagement with the end of an extension of one of said leg means and each of said cam follower means having an opening with first and second cam follower edges;

a drive mechanism within said body member;

a plurality of double sided members coupled for concurrent rotation by said drive mechanism with each cam on each side having first and second cam portions for selective coaction with said first and second cam follower edges of an engaging cam follower means, the relative positioning of said cam portions on each side of each of said cam members, and the positioning of each of said cam members relative to an adjacent one enabling synchronized phased movement of said leg means for enabling propulsion of said toy, said cam members and said cam follower means being configured to provide a reclining generally D-shaped path of pivoting of the engaged extension of said leg means.

11. The combination according to claim 10 wherein said leg means includes leg coupling members pivotally coupled to said body and leg members attachable to said leg coupling members.

12. The combination according to claim 11 wherein said body member is configured in the form of an insect and there are three pairs of leg coupling members and three pairs of leg members.

13. The combination according to claim 12 wherein said cam members and said cam follower means are configured for enabling two leg members from one side of said body member and one leg member from the other side of said body member to engage a supporting surface generally simultaneously.

14. In an animated toy, the combination comprising:

a body member;

a plurality of leg means pivotably coupled to said body member, each of said leg means having an extension thereof within said body member;

a plurality of cam follower means within said body, each of said cam follower means being in engagement with the end of an extension of one of said leg means and each of said cam follower means having first and second cam follower portions;

a drive mechanism; and

a plurality of double sided cam members coupled for rotation by said drive mechanism with each cam on each side having first and second cam portions for coaction with said first and second cam follower portions of an engaging cam follower means for enabling synchronized phased movement of said leg means for enabling propulsion of said toy, said cam members and said cam follower means being configured to provide a reclining generally D-shaped path of pivoting of the engaged end of the extension of said leg means.

15. The combination according to claim 14 wherein said body member is hollow and includes a plurality of integrally formed pivot means for receiving pivotally coacting portions of said leg means.

16. The combination according to claim 15 wherein said integrally formed pivot means includes socket means, and said pivotally coacting portions includes ball means.

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