ANIMATED MOTILE FIGURINE

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ABSTRACT

A system and method for an entertainment system for a young child that includes a motile figurine with self-centering anti-tumbling design that produces an intentionally non-simulation of animal motion that is comical and cartoonish.
FIG. 7
ANIMATED MOTILE FIGURINE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims benefit of U.S. Patent Application No. 62/132,440 filed 12 Mar. 2015, the contents of which are hereby expressly incorporated by reference thereto in its entirety for all purposes.

FIELD OF THE INVENTION

[0002] The present invention relates generally to toys for children, and more specifically, to animated toys that present an intentionally unrealistic cartoonish animation when moved over a play surface.

BACKGROUND OF THE INVENTION

[0003] The subject matter discussed in the background section should not be assumed to be prior art merely as a result of its mention in the background section. Similarly, a problem mentioned in the background section or associated with the subject matter of the background section should not be assumed to have been previously recognized in the prior art. The subject matter in the background section merely represents different approaches, which in and of themselves may also be inventions.

[0004] There are a wide range of toy styles that depict some type of real or fanciful animal. Manufacturers of toys for children are often seeking innovative contributions to this class of toy. Once such contribution has been in a type of animal toy that simulates movement when pulled. This type of animal toy often has a goal of simulating accurate/authentic ambulatory motion. That is, forward motion initiated by some motive force (e.g., a child pulling on a tether attached to the toy) results in a simulated walking motion of the legs of the toy. This simulation is intended to accurately depict the walking motion with gait, synchronization, stride, articulation, pace, and the like.

[0005] Not all children, particularly very young children, are entertained or amused at mechanical ingenuity that accurately replicates authentic limb motion. An amusement system including an ambulatory figurine will have increased entertainment value to some young children when the motion includes enhanced cartoonish motion. Such cartoonish motion would not be confused with motion of an actual creature, it having a bounciness and stiffness that is intentionally non-natural.

[0006] What is needed is a system and method for an amusement system including a motile figurine that provides entertainingly unrealistic cartoonish motion.

BRIEF SUMMARY OF THE INVENTION

[0007] Disclosed is a system and method for an amusement system including a motile figurine that provides entertainingly unrealistic cartoonish motion. The following summary of the invention is provided to facilitate an understanding of some of technical features related to entertainment systems for children like a cartoonish motile figurine, and is not intended to be a full description of the present invention. A full appreciation of the various aspects of the invention can be gained by taking the entire specification, claims, drawings, and abstract as a whole. The present invention is applicable to other entertainment systems, particularly mobile entertainment systems for young children.

[0008] A motile figurine includes a motile framework including a plurality of segments, each the segment including at least one section and a spring coupler wherein the motile framework defines a set of legs, each leg including a foot, collectively defining an angle of attack with respect to a play surface supporting the motile framework, the angle of attack configured to resist tipping of the motile framework as it moves over the play surface; and a façade surrounding the motile framework; wherein motion of the motile framework over the play surface selectivity engages and disengages the feet with the play surface inducing a bouncing, anti-tipping motion and vibration in non-foot sections of the motile framework.

[0009] A method for animating a motile figurine, includes a) pulling a motile framework over a play surface, the motile framework including a plurality of segments, each the segment including at least one section and a spring coupler wherein the motile framework defines a set of legs, each leg including a foot, collectively defining an angle of attack with respect to a play surface supporting the motile framework, the angle of attack configured to resist tipping of the motile framework as it is pulled over the play surface; b) engaging and disengaging chaotically, in response to the pulling step a) one or more of the feet with respect to the play surface inducing both an anti-tumbling, anti-tip bounce in the motile framework and a vibration in one or more components of the motile framework.

[0010] A motile figurine, including a motile framework including a plurality of segments, each the segment including at least one section and a spring coupler wherein the motile framework defines a set of legs, each particular leg of the set of legs including a foot and a spring coupling the foot to the particular leg, the set of legs collectively defining an angle of attack for the motile framework with respect to a play surface supporting the motile figurine, the angle of attack configured to resist tipping of the motile framework while increasing exaggeration of limb motion as the figurine moves over the play surface.

[0011] Any of the embodiments described herein may be used alone or together with one another in any combination. Inventions encompassed within this specification may also include embodiments that are only partially mentioned or alluded to or are not mentioned or alluded to at all in this brief summary or in the abstract. Although various embodiments of the invention may have been motivated by various deficiencies with the prior art, which may be discussed or alluded to in one or more places in the specification, the embodiments of the invention do not necessarily address any of these deficiencies. In other words, different embodiments of the invention may address different deficiencies that may be discussed in the specification. Some embodiments may only partially address some deficiencies or just one deficiency that may be discussed in the specification, and some embodiments may not address any of these deficiencies.

[0012] Other features, benefits, and advantages of the present invention will be apparent upon a review of the present disclosure, including the specification, drawings, and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The accompanying figures, in which like reference numerals refer to identical or functionally-similar elements throughout the separate views and which are incorporated in and form a part of the specification, further illustrate the
present invention and, together with the detailed description of the invention, serve to explain the principles of the present invention.

[F0014] FIG. 1 illustrates an embodiment for a motile figurine including a motile framework with an optional façade providing a thematic visualization;

[F0015] FIG. 2 illustrates an embodiment for the motile framework of FIG. 1;

[F0016] FIG. 3 illustrates an alternate embodiment for a motile framework for use with the optional façade described herein;

[F0017] FIG. 4 illustrates representative blow-molded spring couplers for use in a motile framework;

[F0018] FIG. 5 illustrates a second alternate embodiment for a motile framework for use with the optional façade described herein;

[F0019] FIG. 6-FIG. 9 illustrate an implementation of the second alternate embodiment for a motile framework illustrated in FIG. 5;

[F0020] FIG. 6 is illustrates a perspective view of the implementation;

[F0021] FIG. 7 illustrates a front elevation view of the implementation;

[F0022] FIG. 8 illustrates a top plan view of the implementation; and

[F0023] FIG. 9 illustrates a side elevation view of the implementation.

DETAILED DESCRIPTION OF THE INVENTION

[F0024] Embodiments of the present invention provide a system and method for an amusement system including a motile figurine that provides entertainingly unrealistic cartoonish motion. The following description is presented to enable one of ordinary skill in the art to make and use the invention and is provided in the context of a patent application and its requirements.

[F0025] Various modifications to the preferred embodiment and the generic principles and features described herein will be readily apparent to those skilled in the art. Thus, the present invention is not intended to be limited to the embodiment shown but is to be accorded the widest scope consistent with the principles and features described herein.

[F0026] Definitions

[F0027] Unless otherwise defined, all terms (including technical and scientific terms) used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this general inventive concept belongs. It will be further understood that terms, such as those defined in commonly used dictionaries, should be interpreted as having a meaning that is consistent with their meaning in the context of the relevant art and the present disclosure, and will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.

[F0028] The following definitions apply to some of the aspects described with respect to some embodiments of the invention. These definitions may likewise be expanded upon herein.

[F0029] As used herein, the term “or” includes “and/or” and the term “and/or” includes any and all combinations of one or more of the associated listed items. Expressions such as “at least one of” when preceding a list of elements, modify the entire list of elements and do not modify the individual elements of the list.

[F0030] As used herein, the singular terms “a,” “an,” and “the” include plural referents unless the context clearly dictates otherwise. Thus, for example, reference to an object can include multiple objects unless the context clearly dictates otherwise.

[F0031] Also, as used in the description herein and throughout the claims that follow, the meaning of “in” includes “in” and “on” unless the context clearly dictates otherwise. It will be understood that when an element is referred to as being “on” another element, it can be directly on the other element or intervening elements may be present therebetween. In contrast, when an element is referred to as being “directly on” another element, there are no intervening elements present.

[F0032] As used herein, the term “set” refers to a collection of one or more objects. Thus, for example, a set of objects can include a single object or multiple objects. Objects of a set also can be referred to as members of the set. Objects of a set can be the same or different. In some instances, objects of a set can share one or more common properties.

[F0033] As used herein, the term “adjacent” refers to being near or adjoining. Adjacent objects can be spaced apart from one another or can be in actual or direct contact with one another. In some instances, adjacent objects can be coupled to one another or can be formed integrally with one another.

[F0034] As used herein, the terms “connect,” “connected,” and “connecting” refer to a direct attachment or link. Connected objects have no or no substantial intermediary object or set of objects, as the context indicates.

[F0035] As used herein, the terms “couple,” “coupled,” and “coupling” refer to an operational connection or linking. Coupled objects can be directly connected to one another or can be indirectly connected to one another, such as via an intermediary set of objects.

[F0036] As used herein, the terms “substantially” and “substantial” refer to a considerable degree or extent. When used in conjunction with an event or circumstance, the terms can refer to instances in which the event or circumstance occurs precisely as well as instances in which the event or circumstance occurs to a close approximation, such as accounting for typical tolerance levels or variability of the embodiments described herein.

[F0037] As used herein, the terms “optional” and “optionally” mean that the subsequently described event or circumstance may or may not occur and that the description includes instances where the event or circumstance occurs and instances in which it does not.

[F0038] FIG. 1 illustrates an embodiment for a motile figurine 100 including a motile framework 105 with an optional façade 110 providing a thematic visualization; and FIG. 2 illustrates an embodiment for motile framework 105. Motile framework 105 provides a functional structure that implements one or more goals, including: a) self-correcting system, b) enhanced vibration, c) visual enhancement, d) tactile friendliness (e.g., huggable), e) audio enhancement options, f) break-away tether, g) thematic, h) cartoonish, and i) adaptable to “try me” packaging.

[F0039] Self-Correcting—in the context of the illustrated embodiment, self-correcting may include relative component dimensions and relationships, coupling angles, material construction, and flexible coupling parameters among the components that are designed to resist tumbling so to increase the times that figurine 100 remains relatively upright, while bouncing in response to movement over a play surface. Based upon implementation details, a self-correcting system may
include feet and/or legs angled outward. For example, a spacing between ends of the legs engaging the play surface is greater than a spacing between the opposite ends of these legs (e.g., where they would connect to a “shoulder” or to a “hip bone”). Further, in some implementations, the cartoonish features of figurine 100 further allow for a wider, lower, skeletal framework to move a center of gravity closer to the play surface, such as wider shoulder and hips that reduce opportunities to tip over or tumble. Motile framework 105 has great adaptability for lowering the center of gravity with the way that a rear portion, a forward portion, and connecting portion are designed and implemented. Façade 110 not only helps with thematic visualization, but may also help conceal structural adaptations designed for upright stability.

[0040] Enhanced vibration—in the context of the illustrated embodiment, enhanced vibration may include spring couplers that may be used to interconnect components and subsystems. Parameters of such spring couplers may be tuned so that one or more extremities vibrate with desired amplitude and frequency to visually enhance the cartoonish embellishment of motile figurine 100. There are alternatives to use of actual springs in the spring couplers, such as blow-molded plastic couplers that have been formed in such a way with appropriate materials to have a shape memory that provides a desired amount of “springiness” in the plastic coupler, for example, a type of “living” spring in a plastic mold. In such configurations, it may be possible to integrate the components, systems, and couplers rather than discrete elements. Enhanced vibration may further include, in some implementations, use of silicone or rubber/vinyl grips in or on the feet. An important aspect is to enhance or maximize a coefficient of friction (static and/or dynamic) between the grip and the play surface for a wide range of play surface materials. In some implementations, the grips may be washable and/or user-replaceable. Vibrational effects may begin by a random pattern of engagements and releases of the various grips with the play surface. The structure of motile framework 105 propagates this pattern to the extremities where the intermediate couplings have been designed to enhance the vibrations. Thus the extremities are sensitive to motion and vibrate with significant amplitude at the desired rate(s).

[0041] Visual Enhancement—in the context of the illustrated embodiment, visual enhancement may include use of visual contrasting elements at key locations. For example, contrasting color breaks at strategic locations of façade 110 may aid in highlighting certain motions and vibrations. For example, having light colored “feet” on darker colored “legs” may be one effective implementation.

[0042] Tactile friendliness—in the context of the illustrated embodiment, tactile friendliness may include design and component options that enhance or promote a desire on the part of a young child to hold, hug, and enjoy tactile connection with motile figurine 100. Use of spring couplers between systems, including a spring coupler in a “spine” that connects a forward component from a rearward component adds a tactile softness to the overall assembly that helps to achieve the goal. Façade 110 may also provide some softness and padding to further enhance the desired effect. A design goal of the illustrated embodiment is to convey a floppy, friendly, and funny format.

[0043] Audio enhancement options—in the context of the illustrated embodiment, audio enhancement may include use of sound for enhanced effects. A bell, or set of indicia (e.g., a child name plate and a pet name/info tag) or the like that produce a desired sound (e.g., jangling) when vibrated offer an audio enhancement. Particularly when paired with the vibration enhancement provides a synergistic combination of features.

[0044] Break-away tether—in the context of the present invention, break-away tether may include a limited tensing structure. A feature of motile figurine 100 is that the cartoonish embellishment which desirably but optionally includes the enhanced vibration results from the user pulling it over the play surface. For those implementations with the enhanced gripping effect and the anti-tumble constructions, there is some risk that motile figurine 100 could snag on an obstruction. To decrease any chance that a snag may cause discomfort to the user, break-away tether releases and allows the user to leave the snagged figurine behind. The user may then later unsnap the figurine, re-engage the break-away tether (when implemented in this way—or alternatively replace it) and resume play. There are many break-away solutions, including reusable solutions, which may be used. For example, ball connectors and sockets, embedded magnets, and the like. Some implementations may not be true break-away solutions but may include strain relief such as expanding, telescoping, stretching solutions to reduce any potential harm from a snag. These solutions may both be combined together in some implementations.

[0045] Thematic—in the context of the present invention, thematic may include a characterization as a recognizable animal or creature (real or fantastical). While the movement is intentionally non-realistic, the theme is desirably an animal that promotes the desired goal of the design. For young children, a puppy theme may be desired. For example, breeds that have been determined to be popular with young children are implemented in motile framework 105 and façade 110 (e.g., number and type of extremities, and visual cues for those extremities). It may be advantageous to focus on the most popular breeds particularly in plush world (Dalmatians, Labradors, Retrievers, Terriers, and the like). Some implementations may include toy dogs (Chihuahuas, Pomeranians, Poodles, and the like) whether fully grown or puppy versions. Other directions for subsequent years could include Designer Cross-bred, SPCA Mutts, animals (e.g., cows, horses, ponies, deer, rabbits, spiders, scorpions, lady bugs, multipedes, reptiles, crocodilians), extinct species (e.g., dinosaurs), and fantasy creatures (dragons, unicorns, centaurs, chimerae, manticores, and the like).

[0046] Cartoonish—in the context of the present invention, cartoonish may include visual and functional overlays and tweaks to the underlying functional structure and arrangement. While many parts of the aesthetic of the disclosed embodiment will be dictated by the reality that the appendages are narrow in the middle and big at the outer most points, and that the shoulders and hips are angled and wide (such as to enhance the non-tumbling motion), a more cartoon look and feel than real look and feel is preferred. For example, cartoonish include a visualization that is adorable and above all positively entertaining (e.g., funny and/or comical) such as when figurine 100 and its components begin to vibrate and move.

[0047] Adaptable to "try me" packaging—in the context of the present invention, packaging may include a partially open box or retail system that allows the user to sample one or more of the features highlighted above.

[0048] Motile framework 105 includes a forward assembly 125 and a rearward assembly 130. Each assembly includes
common features, such as a crossbeam 135 and a pair of feet 140. A spring coupler 145 joins each foot 140 to an associated crossbeam 135. Each assembly includes one or two spine extensions (one spine extension for assemblies that are at an end of a motile figure 100 and two spine extensions for intermediate assemblies located between the ends) that are joined to an adjacent assembly using spring coupler 145. Depending upon implementation and intended thematic presentation (e.g., a four-legged animal with an upright head and an upright tail), an assembly will optionally further include an extensity extension to support a head element and/or a tail element. Each of these elements is joined to the assembly using a spring coupler 145.

As illustrated, motile framework 105 includes sections of rigid sturdy tubular material selected to withstand the forces applied by pulling, tumbling, and bouncing during use. The sections are joined to other components and/or sections by a spring coupler 145. In some implementations, spring coupler 145 may be integrated into one or more of the sections or the entire structure may be a single discrete system, such as from a polymer material, with integrated spring couplers defined therein at the appropriate position. The integrated spring couplers can be implemented in many different ways, such as with a material having a “shape memory” sufficient to provide the necessary level of springiness for operation.

[0049] Façade 110 includes a covering, wrapping, layering, coating, overlay, sheet, veneer, casing, housing, or other flexible structure or assembly to conceal all or part of the motile framework. It may be made from any of numerous types of natural or man-made materials, including one or more fabrics, polymers, fibers, and the like. In addition to any concealment function, façade 110 also may include a thematic function to support elements of the theme intended to be visualized by motile figure 100. For example, a head with ears, eyes, nose, and the like. A body portion is structured to visually connote the body portion of the theme (e.g., shaggy black fur for a black bear cub theme). Façade 110 may include fillings and/or other components of a plush implementation.

[0051] Tether 115 offers a method for the user to move motile figure 100 over a play surface 205. The user pulls tether 115 attached to motile figure 100 which initiates the cartoonish ambulation motion as one or more feet 140 engage and release play surface 205. When a particular foot 140 engages, continued motion of the user pulling figure 100 stores energy in the spring coupler associated with particular foot 140. Eventually the particular foot 140 disengages from play surface 205 and the stored energy is released. This release helps induce vibratory motion is motile framework 105 which is amplified by the other spring couplers such as those coupled to the head and tail extremities. Further, any optional passive audio systems (a bell or set of tags or other system coupled to motile figure 100 respond to the energy and vibration(s) to activate and produce an enhancing audio component. Tether 115 may also be used to enhance the theme—such as being implemented as a dog leash for a dog-themed motile figure 100. Other implementations (real or simulated) may include a chain for a wild or fantasy creature or a rope for a pony. Depending upon the intended age group (having an anticipated range of heights), a length of tether 115 helps to set an angle of attack by which the force applied by the user in pulling on tether 115 is communicated to motile figure 100 when it is pulled. That is, greater lengths and younger (hence shorter) children will make the angle shallower (closer to parallel to play surface 205) and thus a force component perpendicular to the play surface less). A steeper angle, for shorter tethers or taller children tends to provide a greater force component in the perpendicular direction. These perpendicular forces help to establish the grip frictional engagement which, all other things being constant, is greater the shallower the angle. The angle may also affect the propensity for tumbling or tipping if it tends to raise the center of gravity of motile figure 100 during motion.

[0052] Break-away connector 120 is an optional component to help reduce risk of any problems associated with a significant snag of one or more feet 140 on an obstruction. When encountering a significant snag, a user that continues to pull on tether 115 will cause connector 120 to release when the force exceeds a predetermined value. The user must then re-establish tether 115 (e.g., recoupling connector 120) in some cases repossession motile figure 100 at a location free of the obstruction, before resuming ambulatory play. Other implementations may include a single use “tear away” tether or an expanding strain relief system that relieves some of the force without breaking away.

[0053] FIG. 3 illustrates an alternate embodiment for a motile framework 305 for use with optional façade 110 described herein. Framework 305 includes at least one section 310 (e.g., a spine section) that includes a pair of relatively rigid segments 315 joined together by a spring coupler 320. Segments 315 and spring coupler 320 are part of a unitary component formed in the same blow molding process (e.g., one or more of extrusion, injection, and injection stretch blow molding processes). However, some embodiments may employ discrete blow molded spring couplers joined with discrete segments 315 (which may be blow molded as well). Some embodiments may have large portions (including the entirety) of motile framework 305 blow molded as a single unit having appropriately located spring couplers.

[0054] Framework 305 includes a set of blow molded foot sections 325 (similar to foot 140) as part of leg sections (which include blow molded spring couplers 320) that are, in turn, coupled to the spine section. A blow molded head segment 330 and a blow molded tail segment 335 are each coupled to the spine section using spring coupler 320.

[0055] Also illustrated in FIG. 3 is tether 115 including break-away connector 120. An optional audio system 340 is coupled to the spine section and is responsive to vibrations of motile framework 305. Audio system 340 may include a bell, two or more metal tags or plates, that produce an audio component in response to motion of motile framework 305 over a play surface 345.

[0056] For any particular cartoonish ambulation or other desired motion and tip resistance, a size, weight, composition, materials, type of polymer/plastic, arrangement, and construction of the structures of a motile framework such as those illustrated herein will need to be tuned. For example, as illustrated, an angle of attack of leg segments, and particularly foot sections, are important in setting a bouncing profile and a vibration response profile. For purposes of this application, angle of attack means particular arrangements and orientations of leg segments and foot sections to achieve the desired anti-tumbling, anti-tip, vibration-inducing cartoonish ambulation. For example, as illustrated, the leg segments are tilted forward (a forward most leg segment less vertical as compared to a more rearward leg segment) with a forward portion of the spine segment is lower (closer to play surface 345) than a rearward portion of the spine segment. A distance between feet coupled to a “shoulder” is greater than a width of the
"shoulder" supporting those feet. Further, each foot section is rotated outwardly so that a distance between forward parts of the front feet is greater than a distance between rearward parts of the front feet. In the illustrated embodiment, this arrangement is one structural arrangement that reduces tipping. Some implementations may not include all these features in the angle of attack, implementing a subset of one or two of them rather than all three.

[0057] As noted herein, spring values for spring couplers 320 help determine a vibration response of the various sections. Motile framework 505 includes spring couplers that have differing spring values depending upon which sections are joined. For example, spring coupler 320 in the spine section is stiffer than other spring values for other spring couplers 320. Spring coupler 320 joining a small lightweight section, for example tail section 335, may have a looser spring value (even substantially looser) as compared to corresponding spring values of the spring coupler in the spine segment. Spring coupler 320 in a leg segment may have spring values intermediate to the corresponding values of spring couplers 320 in the spine segment and tail segment. Head section 330 may be more massive as compared to tail section 335 and thus spring coupler 320 joining head section 330 to the spine segment 310 may be stiffer. A mass of the coupled sections and the desired motion in response to motion may help establish a value for the spring couplers.

[0058] FIG. 4 illustrates a set 400 of representative blow molded spring couplers for use in a motile framework such as those illustrated herein. As noted, some embodiments provide spring couplers with different spring values in the same motile framework, spring values for any particular spring coupler determined by its role and desired vibration response. Set 400 includes a first blow molded spring coupler 405 and a second spring molded spring coupler 410, each having differing spring values. In the case of blow molded couplers, an area having a series of alternating diameters (for circular cross sections) or "waists" forms a spring coupler. Spring couplers have larger waists, such as spring coupler 405 with a waist 415 offers a stiffer, less flexible spring coupler than spring coupler 410 with a waist 420 having narrower waists. Waist 420 provides for a softer, more flexible spring coupler. Variation of waist dimensions, number of waists in a series, a diameter of the un-waist portion may all influence the spring values for a particular blow molded spring coupler. Sometimes the general type of structure is referred to as a living hinge in which relatively large relatively rigid plastic structures are joined by thinner, relatively flexible structures. Some implementations may refer to a blow molded spring coupler in the sense described herein and/or in the sense of the living hinge. A blow molded spring coupler may include living hinge elements in some cases.

[0059] FIG. 5 illustrates a second alternate embodiment for a motile framework 505 for use with the optional façade described herein. Framework 505 is similar to framework 105 with the modifications described or implied as follows. Framework 505 improves overall stability (e.g., a self-correcting motion provides an improved ability to remain upright and limit roll overs (lateral or longitudinal)) while improving overall animation capability. Framework 505 lowers a center of gravity by, among other things, including more sharply angled shoulders as compared to framework 105. Shoulders are broad and legs are inwardly angled from the vertical (towards the center/core) which help to define a pivoting motion (relative to the center of gravity or core) for frame-work 505. An embodiment including the angled legs/feet allows that a foot striking an underlying support surface (e.g., ground, floor, pavement, or the like) there is a reactive kickback force that is directed around and/or above the core which allows it to have a greater range of animation motion with an attenuated perturbation of the center of gravity. One way to think of this motion is referred to as "stick and flick" in which a foot engages a portion of a support surface and further motion of the figurine causes a coupler to bend, twist, or distort until the spring is able to straighten the foot relative to its leg/arm. This process continues independently for each spring-loaded foot. This can appear as an exaggerated motion of the limbs while decreasing the rollover/flipover risk.

[0060] For example, FIG 6-FIG 9 illustrate an implementation 600 of motile framework 505. FIG. 6 is illustrates a perspective view of implementation 600. FIG. 7 illustrates a front elevation view of implementation 600 FIG. 8 illustrates a top plan view of implementation 600 and FIG. 9 illustrates a side elevation view of implementation 600. In FIG. 7, implementation 600 includes rear legs having a wider stance, all four legs having an inward angle of about sixty degrees, and shoulders have a downward angle toward the center which lowers a generally horizontal axis of the spine/core below a top height of the shoulders.

[0061] FIG. 8 and FIG. 9 depict that the legs have a tilt towards the rear (front legs having sixty degree rearward tilt and rear legs having seventy-five degree rearward tilt though other angles are possible). A design goal of implementation 600 is that energy from the springs from legs is directed around the center of gravity to create more of a pivoting action that increases stability and limits roll overs. The "spider stance" of inward tilting legs and downward tilting shoulders also lowers the center of gravity of a spine/back/core that extends back towards the rear while allowing for longer leg springs to enhance and exaggerate leg motion. A desired motion of implementation 600 is a wiggling hopper that is stable when being pulled in a variety of situations and speeds over a surface. The lowered spine setup is also beneficial for the leash attachment area. It is key to have the pull point as low as possible to avoid forward rolls. The spider stance offers many advantages.

[0062] The disclosed angles may be implemented in a range of about 85 degrees to about 45 degrees with the understanding that an important aspect of any configuration is that the angles and dimensions are relativial in that adjustment of one dimension may result in adjustment of other dimensions sufficient to maintain a desired level of stability/anti-roll characteristics. Having feet that "stick and flick" independent of each other with the spider stance of outward tilting and extending legs and a forward angle of attack of the legs help to provide an exaggerated motion for the limbs while damping perturbations of the core/spine.

[0063] Some problems with having springs directed at the center of gravity in an A-frame type setup is that it directly jars the center of gravity (which is also higher and disruptive) knocking such an arrangement off balance and creating an erratic motion prone to rollovers and flipsovers. Implementation 600 offers substantial benefits over springs with higher centers of gravity.

[0064] Embodiments of the present invention may a relative rigid body, for example foot 140, that has a particular number of degrees of freedom in its motion, primarily constrained by its associated spring coupler. The spring couplers of the illustrated embodiments offer up to six degrees of
freedom for the joined rigid body. These include forward/ backward, up/down, left/right, and pitch, yaw, and roll. That is, translations and rotations about three orthogonal axes. Not all rigid bodies of a motile framework may have all six degrees of freedom in its motion, and in some implementations the motion may be more constrained to less than 6 (including any of 1-5 degrees of freedom).

[0065] Use of a motile framework as described herein offers an advantage in that the motile framework may serve as a template for multiple different motile figurines. Each different figurine shares a common motile framework but includes a different optional façade distinguishing itself from the others. The façade may present a thematic

[0066] The disclosed frameworks may, in some embodiments, be wholly or partially concealed using the façade, such as illustrated in FIG. 1. The façade may present a thematic portrayal of a real or fanciful creature that may appear erratically animated while being pulled but actually having improved stability. The façade may be implemented in many different ways, including hard or soft exoskeletons, plush exteriors, and the like.

[0067] The system and methods above has been described in general terms as an aid to understanding details of preferred embodiments of the present invention. In the description herein, numerous specific details are provided, such as examples of components and/or methods, to provide a thorough understanding of embodiments of the present invention. While the illustrated embodiments include a number of bias couplers, springs, or the like, that join subcomponents together, not all embodiments may include the same number and arrangement of couplers. For example, some embodiments may dispense with use of a spine coupler that forms all or a portion of the core/center/spine. This may result in less animation but can in some cases reduce a cost of goods to allow an implementation to be available to more users. Some features and benefits of the present invention are realized in such modes and are not required in every case. One skilled in the relevant art will recognize, however, that an embodiment of the invention can be practiced without one or more of the specific details, or with other apparatus, systems, assemblies, methods, components, materials, parts, and/or the like. In other instances, well-known structures, materials, or operations are not specifically shown or described in detail to avoid obscuring aspects of embodiments of the present invention.

[0068] Reference throughout this specification to “one embodiment”, “an embodiment”, or “a specific embodiment” means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the present invention and not necessarily in all embodiments. Thus, respective appearances of the phrases “in one embodiment”, “in an embodiment”, or “in a specific embodiment” in various places throughout this specification are not necessarily referring to the same embodiment. Furthermore, the particular features, structures, or characteristics of any specific embodiment of the present invention may be combined in any suitable manner with one or more other embodiments. It is to be understood that other variations and modifications of the embodiments of the present invention described and illustrated herein are possible in light of the teachings herein and are to be considered as part of the spirit and scope of the present invention.

[0069] It will also be appreciated that one or more of the elements depicted in the drawings/figures can also be implemented in a more separated or integrated manner, or even removed or rendered as inoperable in certain cases, as is useful in accordance with a particular application.

[0070] Additionally, any signal arrows in the drawings/figures should be considered only as exemplary, and not limiting, unless otherwise specifically noted. Combinations of components or steps will also be considered as being noted, where terminology is foreseen as rendering the ability to separate or combine is unclear.

[0071] The foregoing description of illustrated embodiments of the present invention, including what is described in the Abstract, is not intended to be exhaustive or to limit the invention to the precise forms disclosed herein. While specific embodiments of, and examples for, the invention are described herein for illustrative purposes only, various equivalent modifications are possible within the spirit and scope of the present invention, as those skilled in the relevant art will recognize and appreciate. As indicated, these modifications may be made to the present invention in light of the foregoing description of illustrated embodiments of the present invention and are to be included within the spirit and scope of the present invention.

[0072] Thus, while the present invention has been described herein with reference to particular embodiments thereof, a latitude of modification, various changes and substitutions are intended in the foregoing disclosures, and it will be appreciated that in some instances some features of embodiments of the invention will be employed without a corresponding use of other features without departing from the scope and spirit of the invention as set forth. Therefore, many modifications may be made to adapt a particular situation or material to the essential scope and spirit of the present invention. It is intended that the invention not be limited to the particular terms used in following claims and/or to the particular embodiment disclosed as the best mode contemplated for carrying out this invention, but that the invention will include any and all embodiments and equivalents falling within the scope of the appended claims. Thus, the scope of the invention is to be determined solely by the appended claims.

What is claimed as new and desired to be protected by Letters Patent of the United States is:

1. A motile figurine, comprising:
   a motile framework including a plurality of segments, each said segment including at least one section and a spring coupler wherein said motile framework defines a set of legs, each leg including a foot, collectively defining an angle of attack with respect to a play surface supporting the motile framework, said angle of attack configured to resist tipping of the motile framework as it moves over the play surface; and
   a façade surrounding said motile framework;
   wherein motion of said motile framework over said play surface selectively engages and disengages said feet with said play surface inducing a bouncing, anti-tipping motion and vibration in non-foot sections of the motile framework.

2. A method for animating a motile figurine, comprising:
   a) pulling a motile framework over a play surface, said motile framework including a plurality of segments, each said segment including at least one section and a spring coupler wherein said motile framework defines a set of legs, each leg including a foot, collectively defining an angle of attack with respect to a play surface supporting the motile framework, said angle of attack...
configured to resist tipping of the motile framework as it is pulled over said play surface;
b) engaging and disengaging chaotically, in response to said pulling step a) one or more of said feet with respect to said play surface inducing both an anti-tumbling, anti-tip bounce in said motile framework and a vibration in one or more components of said motile framework.

3. A motile figurine, comprising:
a motile framework including a plurality of segments, each said segment including at least one section and a spring coupler wherein said motile framework defines a set of legs, each particular leg of said set of legs including a foot and a spring coupling said foot to said particular leg, said set of legs collectively defining an angle of attack for said motile framework with respect to a play surface supporting the motile figurine, said angle of attack configured to resist tipping of the motile framework as it moves over the play surface.

4. The motile figurine of claim 3 further comprising:
a façade surrounding said motile framework;
wherein motion of said motile framework over said play surface selectively engages and disengages said feet with said play surface inducing a bouncing, anti-tipping motion and vibration in non-foot sections of the motile framework.

5. The motile figurine of claim 3 wherein said plurality of segments includes:
a forward segment having a first body member including a first shoulder including a first pair of arms and a rearward facing core spine coupler, a first pair of feet, and a first pair of springs coupling said first pair of feet to said first pair of arms;
a rearward segment having a second body member including a second shoulder including a second pair of arms and a forward facing core spine coupler, a second pair of feet, and a second pair of springs coupling said second pair of feet to said second pair of arms; and

6. The motile figurine of claim 5 wherein said first pair of arms and spring coupled feet define a first pair of tilted legs, each particular leg of said first pair of tilted legs tilted forward a first forward angle relative to said rearward facing core spine coupler, and each particular leg of said first pair of tilted legs tilted outward a first outward angle relative to said rearward facing core spine coupler, and wherein said second pair of arms and spring coupled feet define a second pair of tilted legs, each particular leg of said second pair of tilted legs tilted forward a second forward angle relative to said rearward facing core spine coupler, and each particular leg of said second pair of tilted legs tilted outward a second outward angle relative to said rearward facing core spine coupler.

7. The motile figurine of claim 6 wherein outward angles are equal and wherein said forward angles are different from said outward angles.

8. The motile figurine of claim 7 wherein outward angles are about 60 degrees, wherein said first forward angle is about 60 degrees, and wherein said second forward angle is about 75 degrees.

9. The motile figurine of claim 5 wherein each said arm of said first shoulder includes a V-shaped arm portion coupled to said rearward facing core spine and wherein each said arm of said second shoulder includes a V-shaped arm portion coupled to said forward facing core spine.

10. The motile figurine of claim 6 wherein each said arm of said first shoulder includes a V-shaped arm portion coupled to said rearward facing core spine and wherein each said arm of said second shoulder includes a V-shaped arm portion coupled to said forward facing core spine.

11. The motile figurine of claim 7 wherein each said arm of said first shoulder includes a V-shaped arm portion coupled to said rearward facing core spine and wherein each said arm of said second shoulder includes a V-shaped arm portion coupled to said forward facing core spine.

12. The motile figurine of claim 8 wherein each said arm of said first shoulder includes a V-shaped arm portion coupled to said rearward facing core spine and wherein each said arm of said second shoulder includes a V-shaped arm portion coupled to said forward facing core spine.

13. The motile figurine of claim 5 wherein said first pair of arms have a first breadth and wherein said second pair of arms have a second breadth greater than said first breadth.

14. The motile figurine of claim 6 wherein said first pair of arms have a first breadth and wherein said second pair of arms have a second breadth greater than said first breadth.

15. The motile figurine of claim 12 wherein said first pair of arms have a first breadth and wherein said second pair of arms have a second breadth greater than said first breadth.

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