April 28, 1953 C. F. CANDEE 2,636,317

TOY ANIMAL FIGURE

Filed July 19, 1949 2 SHEETS--SHEET 1

Fig. 1.

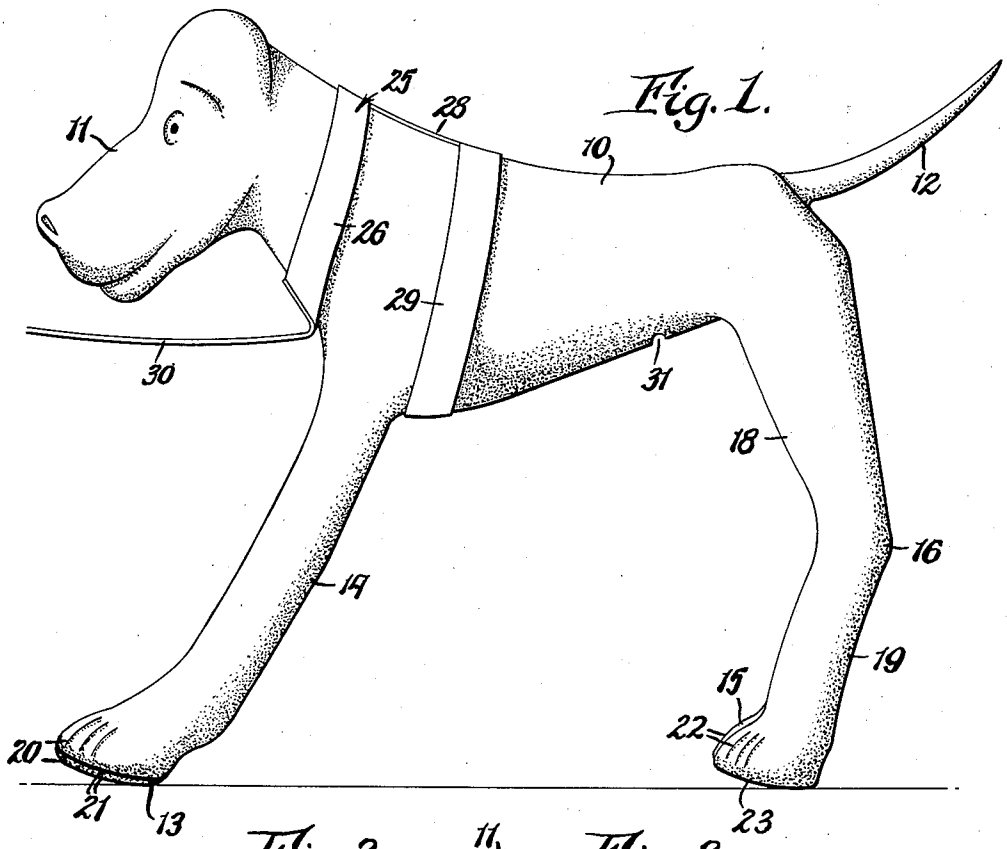


Fig. 2.

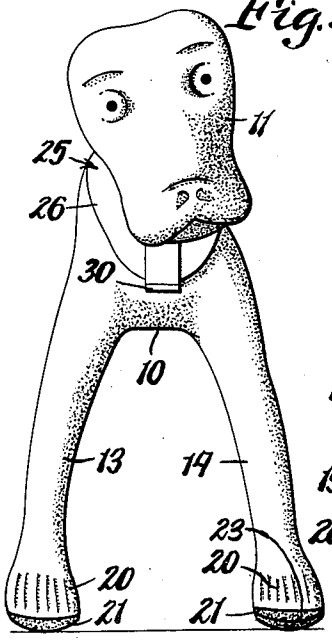
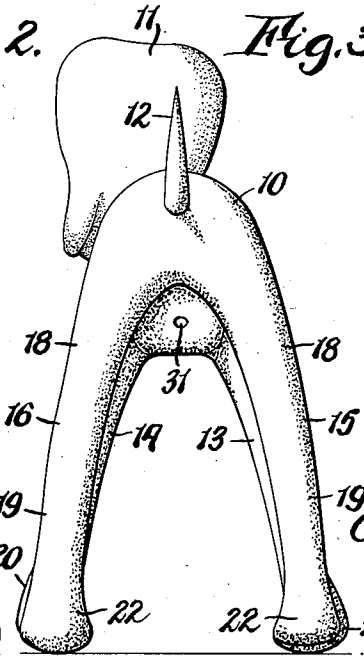


Fig. 3.



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TOY ANIMAL FIGURE

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Fig. 4.

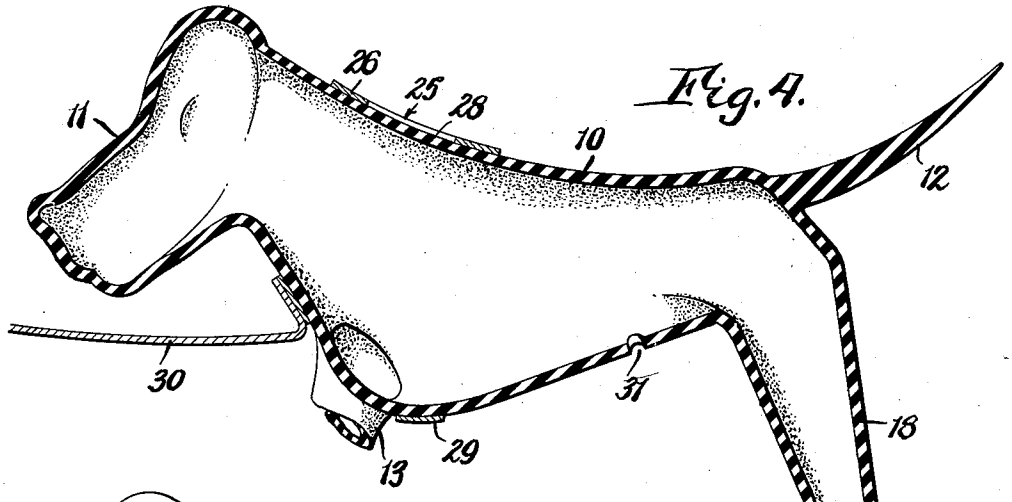


Fig. 5.

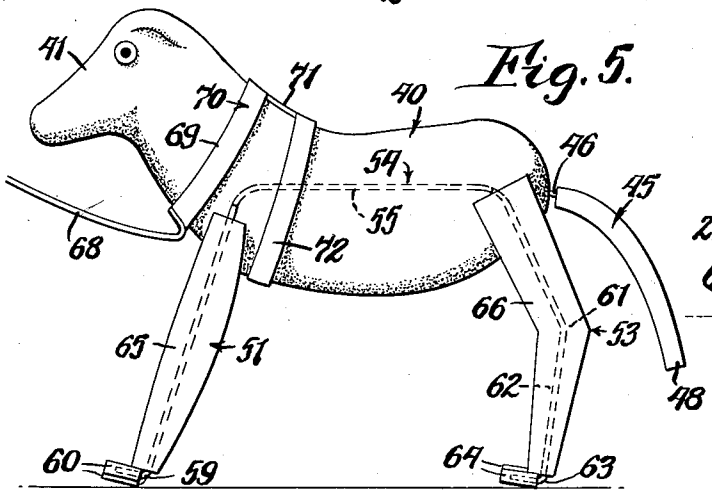


Fig. 6.

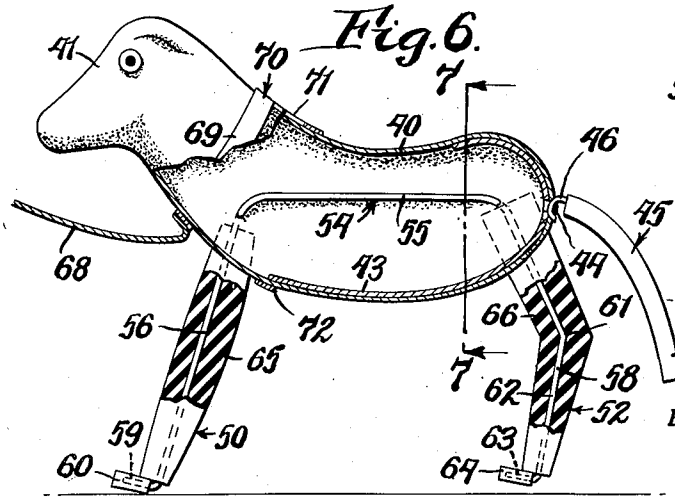
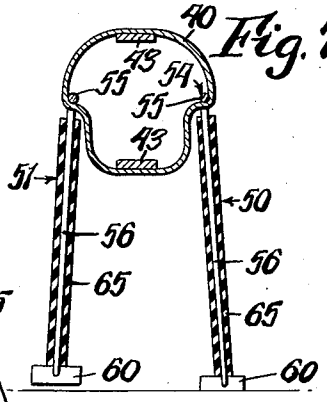


Fig. 7.



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TOY ANIMAL FIGURE

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Application July 19, 1949, Serial No. 105,474

3 Claims. (Cl. 46—123)

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This invention relates to a toy and more particularly a toy in simulation of a standing four legged animal which, when pulled along a floor or other horizontal supporting surface, has a leg movement in simulation of a live walking dog.

One of the principal objects of the present invention is to provide a toy animal having such leg movement in which the toy is in the form of a unitary structure, that is, entirely free from jointed or articulated parts.

Another object is to provide such a toy in which the legs can essentially be constructed of rubber or metal.

Another object is to provide such a toy which can be decorated to provide either a life like or a comic representation of the animal being copied.

Another object is to provide such a toy which is note likely to be broken or get out of order even when subjected to the rough usage frequently accorded toys by children.

Another object is to provide such a toy the action of which is highly amusing and entertaining both to grown-ups and to children and which in some measure supplants a live pet.

Another object is to provide such a toy which is operative on a wide variety of surfaces, such as on rugs and carpets as well as highly polished floors and table tops.

Another object is to provide such a toy which can be actuated from a leash extending upwardly and forwardly from the toy. By this feature the toy can be pulled along the floor without bending or stooping as would be the case if the leash were required to be held horizontally to impose a horizontal force on the toy.

Another object is to provide such a toy which, when constructed of rubber, is essentially in the form of a single hollow casting, although flock, hair or fur can be applied to the casting, if desired, for decorative effect.

Another object is to provide such a toy which, when made of a rubber casting, can be collapsed or deflated into a sprawling figure, and which upon thereafter being set down, will gradually reinflate itself and resume its original shape in a manner amusingly similar to a live dog stretching itself.

Another object is to provide such a toy four legged animal which, when made of rubber, can be made to sit down in a comic imitation of a live animal sitting down.

Other objects and advantages of the invention will appear from the following description and drawings in which:

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Fig. 1 is a side elevational view of a cast rubber dog embodying the present invention.

Fig. 2 is a front elevational view thereof.

Fig. 3 is a rear elevational view thereof.

Fig. 4 is a fragmentary vertical longitudinal central section through the body of the dog shown in Figs. 1–3 and the section being continued through the rear right hind leg.

Fig. 5 is a view similar to Fig. 1 of a modification of the invention in which the legs are essentially made of spring wire instead of resilient rubber.

Fig. 6 is a fragmentary vertical longitudinal central section through the form of toy shown in Fig. 5, parts of the front and rear right hind legs of the dog being shown in section.

Fig. 7 is a vertical sectional view taken on line 7—7, Fig. 6.

Referring particularly to the form of the invention shown in Figs. 1–4, the toy is shown as embodied in the representation of a standing dog having a hollow rubber body 10 provided with an integral hollow rubber head 11, the head in particular locating the center of gravity well toward the forward end of the body, this being preferred. The body is also provided with an integral rubber tail 12. The toy dog also has a right hollow rubber fore leg 13, a left hollow rubber fore leg 14, a right hollow rubber hind leg 15 and a left hollow rubber hind leg 16, all of the hollow rubber legs communicating with the interior of the hollow rubber body 10. The front legs 13, 14 are preferably relatively straight and incline downwardly and forwardly but the rear legs 15, 16 are shaped in the manner of a dog's hind leg and arranged to have a thigh portion 18 extending downwardly and slightly rearwardly and a lower or shin bone portion 19 which extends downwardly and forwardly relative to the vertical.

Each of the fore legs 13, 14 is formed at its lower end to provide a pawl 20 having a bottom frictional face 21 of substantial area, each of these faces curving upwardly and forwardly from a heel which initially engages the surface on which the toy dog is supported. Similarly each of the hind legs is formed at its lower end to provide a paw 22 having a bottom frictional face 23 of substantial area, each of these faces 23 curving upwardly and forwardly from a heel which initially engages the surface on which the toy dog is supported.

The dog is shown as provided with a harness 25 which can be molded on the body 10 or adhesively applied thereto, the harness being shown

as comprising a neck band 26 connected by a back strap 28 to a chest band 29. A leash 30 is shown as connected to the lower central part of the neck band 26, the point of attachment of the leash 30 being preferably near a horizontal plane intersecting the center of gravity of the toy, this center of gravity also preferably being toward the forward end of the body 10 so that the preponderating weight is on the fore legs 13, 14.

As previously indicated the geometry of the toy must be held within certain critical limits in order to have it walk in the manner of a live dog when pulled along a supporting surface by the leash 30.

An important feature of this proportioning of the dog to accomplish this objective is the length of the legs 13–16. These legs must be relatively long and springy, so that upon the toy being drawn forward by the leash 30 each leg will first be held back and flex rearwardly due to the friction imposed upon its paw and then spring forwardly to its original position relative to the body when the pulling force exceeds this resistance. Desirably the length of the legs 13–16 is approximately equal to the length of the body 10.

A further condition is that the fore legs 13 and 14 slant forwardly at approximately the same angle so as to lie generally in a common plane at right angles to the axis of the body and that the hind legs 15 and 16 likewise are approximately in register with each other transversely of the body. It is also important that the fore legs incline downwardly and forwardly this inclination being not more than 40° forwardly from the vertical and preferably from 17° to 30° forwardly from the vertical. It is also desirable that at least the lower part 19 of each rear leg 15, 16 incline downwardly and forwardly but preferably the inclination of the lower parts 19 of the rear legs 15, 16 is less than the downward and forward inclination of the front legs 13, 14. The downward and forward inclinations of the lower parts 19 of the rear legs 15, 16 should not be more than 20° forwardly from the vertical and preferably from 6° to 15° forwardly from the vertical.

A further important feature in securing a lifelike walking movement of the toy dog upon being drawn forwardly by the leash 30 is that the opposite front and rear legs are slightly shorter than the other pair of legs. Thus in the drawings the right front leg 13 and the rear left leg 16 are from 2 to 3 millimeters longer than the other two legs 14 and 15.

More generally considered, it is important that the body 10, together with the head and tail be heavy enough to cause a firm frictional engagement between the under surfaces 21, 23 of the paws and the supporting surface. On the other hand it is equally important that this weight be not so great as to collapse the legs. It is also important that the legs be spread laterally sufficiently far to provide transverse stability. For this purpose, with a dog having a body of normal width it is important that all of the legs incline downwardly and outwardly as shown. Without such lateral stability the dog would tend to topple over sideways as it is dragged along.

Another most important feature of the invention as shown in Figs. 1–4 is that the rubber composing at least the legs be resilient enough to permit the legs to bend in response to the friction imposed on the bottoms of the paws. It is also highly desirable that the entire body be made of a rubber which can be readily distorted by hand. By using such thin walled rubber it is possible to make the dog sit down by simply bending the rear legs 15, 16 of the toy at the hip, this bend permitting the toy to be placed in a sitting position with its rear legs very naturally and comically projecting forwardly and outwardly along the supporting surface and the legs retaining this bent position until the dog is picked up, upon which the legs resume the normal position shown.

A further very highly desirable feature of the invention is the provision of an air vent 31 through one of the rubber walls. Desirably this air vent can be placed through the abdominal wall as shown. The provision of this air vent 31 provides another comic action. Thus with the air vent 31 the dog can be gripped between the hands and the air forced out of the interior of the toy so as to collapse the toy. With the rubber walls of the toy of the desirable elasticity, when the collapsing pressure is removed the walls slowly distend to their original condition at a rate determined by the size of the vent 31. In so returning from a collapsed condition to the fully operative condition shown, the toy gives a very lifelike imitation of a stretching dog, the stretching being particularly full and complete.

Further, by the use of a thin walled body it is possible to manipulate the dog in the manner of a jointed doll. Thus the body can be held in the arms and the head manipulated by one's more or less concealed hand to look up or from side to side. The legs can be similarly manipulated.

In operation, with the dog proportioned as above described and as shown in Figs. 1–4, when the leash 30 is pulled a frictional contact is maintained between the slightly longer front right and rear left legs 13 and 16 so that these legs flex rearwardly. At the same time, the other two legs, namely the front left and rear right legs 14 and 15, being slightly shorter, move forward. As the pressure against the longer legs 13 and 16 overcomes the friction of the paws of these legs against the supporting surface the reactive force of these legs causes these legs to spring forwardly and at the same time the entire weight of the toy is transferred to the two shorter legs 14 and 15. This effects a frictional engagement between the paws of the two shorter legs and the supporting surface and which continues until the longer legs 13, 16 again take hold of the supporting surface. When this occurs the shorter legs spring forwardly because of the relief of the friction against their paws. The alternate or out of phase action of the longer legs 13, 16 and the shorter legs 14, 15 is, of course, very rapid, and as the toy animal is drawn along a supporting surface all of the legs are in continuous short forward stepping movement which is highly amusing and lifelike.

Further, as previously indicated, the toy as shown in Figs. 1–4 can be made to sit down by bending the rear legs 15, 16 at the hips of the animal and the toy can be made to give a realistic appearance of a dog profoundly stretching himself, this being due to the vent 31 being sufficiently restricted so that the hollow interior of the toy can be refilled with air through the action of the rubber walls in distending themselves only at a definite rate.

It is not essential, although of course desirable, that the toy be made of rubber. In Figs. 5–7 is illustrated a toy having a body supported essentially by wire legs which are anchored in the body and provided at their lower ends with friction pads to obtain the lifelike walking movement of the toy on being drawn forwardly. In this

modified form of the invention as shown in Figs. 5–7, the body 40 of the toy is shown as being hollow and as made of rigid form such as of laminated fabric and adhesive. The head 41 of the toy can be made of the same laminated fabric integrally with the body 40, the adhesive hardening so as to provide a rigid shell for both the body and the head.

This rigid hollow laminated shell, is also preferably reinforced by an internal longitudinal metal strip 43 which is adhesively secured to the interior of the shell by the adhesive holding the fabric together and which extends along the abdomen, up the rear end of the body and forwardly part way along the back. This strip 43 of metal can have an outwardly offset eye 44 at its rear end which projects outwardly from the rear end of the body 40 at the region of the tail of the dog. This eye 44 is shown as serving as the anchorage for a tail 45 made of a piece of wire 46 having a hook which engages the projecting eye 44 and it can be provided with a suitable covering 48.

The toy is provided with a front pair of legs 50 and 51 and a rear pair of legs 52 and 53, these legs corresponding to the legs 13–16 of the form of the invention shown in Figs. 1–4. These legs are essentially made of spring steel or piano wire. At each side of the body 40 a U-shaped piece 54 of such wire is provided, this U-shaped piece of wire having its cross part 55 arranged inside the body 40 and secured adhesively to the corresponding side of the body by the same adhesive which unites the laminations of the body 40. Each piece of wire 54 also has a front leg 56 which extends through the wall of the body and forms the corresponding front leg 50 or 51 and a rear leg 58 which extends through the wall of the body 40 and forms the corresponding rear leg 52 or 53. The forward extremity of each piece of wire 54 is provided with a forward extension 59 to which a pad or paw 60 is secured, this pad serving as a friction member engaging the surface on which the toy dog is supported. The rear leg 58 of the piece of wire 54 is also preferably bent as indicated at 61 to provide a shin bone section 62 which inclines downwardly and forwardly. The lower extremity of each rear leg 58 is also shown as bent forwardly, as indicated at 63, and as having secured thereto a pad 64 forming a paw for each rear leg. For lifelike appearance, the wire leg 56 comprising each foreleg 50 and 51 of the dog can be covered with a sheath 65 of rubber or like material and similarly the wire 58 comprising each rear leg 52 and 53 can be covered with a sheath 66 of rubber or like material.

As with the form of the invention shown in Figs. 1–4 the toy is provided with a leash 68 which can be secured to the neckband 69 of a harness 70. This harness can be completed by a back strap 71 connecting the neckband 69 with a chestband 72.

The form of the invention as shown in Figs. 5–7 similates a walking action the same as with the form of the invention shown in Figs. 1–4 and for this purpose the same geometry should be maintained. Thus the right front and left hind legs 45 and 49, respectively, are from 2 to 3 millimeters longer than the other two legs 46 and 48. Also the attachment for the leash 63 is preferably approximately near the horizontal plane intersecting the center of gravity of the dog and the center of gravity is preferably disposed toward the forward end of the body 40 so that the weight of the toy is principally on the front legs 45 and 46. Also these front legs incline forwardly, relative to the vertical, not more than 40° and preferably from 17° to 30°. Likewise the lower part 58 of each rear leg also inclines forwardly from the vertical but preferably at a lesser angle than the fore legs 45 and 46, this angularity having a maximum of 20° from the vertical and preferably from 6° to 15°.

Likewise the front and rear legs at opposite sides of the toy are preferably in transverse alignment with each other and the legs also preferably spread or incline downwardly and outwardly so as to provide the desired lateral stability.

With the dog shown in Figs. 5–7 so constructed, it will be seen that its action in simulating the walking movement on being drawn along a surface by its leash 63 will be identical as that described with reference to Figs. 1–4, the only essential difference being that the form of the invention shown in Figs. 5–7 is essentially a toy having spring wire legs whereas the form of the invention shown in Figs. 1–4 is essentially a toy having hollow rubber legs. The form of the invention shown in Figs. 5–7 lacks, of course, the ability of being made to sit down and also of stretching itself, these features being peculiar to the hollow rubber form of the invention.

From the foregoing it will be seen that the invention provides a very simple toy in the form of a four legged animal which has a highly entertaining and amusing walking action as it is pulled along a surface by its leash and also fulfills the other objects heretofore enumerated.

I claim:

1. A toy in simulation of a standing four legged animal, comprising a body, a pair of transversely spaced flexible and resilient fore legs fixed to and supporting the front end of said body, a pair of transversely spaced flexible and resilient hind legs fixed to and supporting the rear end of said body, and paws at the extremities of said legs and adapted to frictionally engage the supporting surface whereby on application of a force in moving said body longitudinally each of said paws is frictionally restrained by said surface to flex its leg until said force overcomes the frictional restraint and its leg springs to its original position, said legs being of a length approximately equal to the length of said body with one fore leg and the opposite hind leg being slightly shorter than the other legs and said fore legs inclining downwardly and forwardly from 17° to 30° relative to the vertical so that the action of certain of said legs is out of phase with the action of other of said legs to impart a realistic walking movement to the toy so moved.

2. A toy in simulation of a standing four legged animal, comprising a body, a pair of transversely spaced flexible and resilient fore legs fixed to and supporting the front end of said body, a pair of transversely spaced flexible and resilient hind legs fixed to and supporting the rear end of said body, and paws at the extremities of said legs and adapted to frictionally engage the supporting surface whereby on application of a force in moving said body longitudinally each of said paws is frictionally restrained by said surface to flex its leg until said force overcomes the frictional restraint and its leg springs to its original position, said legs being of a length approximately equal to the length of said body with one fore leg and the opposite hind leg being slightly shorter than the other legs and said fore legs inclining downwardly and forwardly from 17° to 30° relative to the vertical and at least the lower part of

said hind legs inclining downwardly and forwardly from 6° to 15° relative to the vertical so that the action of certain of said legs is out of phase with the action of other of said legs to impart a realistic walking movement to the toy so moved.

3. A toy in simulation of a standing four legged animal, comprising a relatively thin walled hollow rubber body, a pair of integral transversely spaced relatively thin walled hollow flexible and resilient rubber fore legs fixed to and supporting the front end of said body, a pair of integral transversely spaced relatively thin walled hollow flexible and resilient rubber hind legs fixed to and supporting the rear end of said body, and integral rubber paws adapted to frictionally engage the supporting surface whereby on application of a force in moving said body longitudinally each of said paws is frictionally restrained by said surface to flex its legs until said force overcomes the frictional restraint and its leg springs to its original position, said rubber walls being yieldingly resistive to distortion and tending to resume a normal condition, said legs being of a length approximately equal to the length of said body with one fore leg and the opposite hind leg being slightly shorter than the other legs and

said fore legs inclining downwardly and forwardly from 17° to 30° relative to the vertical so that the action of certain of said legs is out of phase with the action of other of said legs to impart a realistic walking movement to the toy so moved and one of said walls being provided with a vent opening to permit of manually collapsing the toy which, on release, resumes its original condition with a life-like stretching action and said hind legs also being divergent laterally of the body so as to be distortable to a position alongside said body to place the toy in a sitting position.

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