Nov. 12, 1968 A. STUBBMANN 3,410,024

ACROBATIC TOY

Filed April 29, 1966

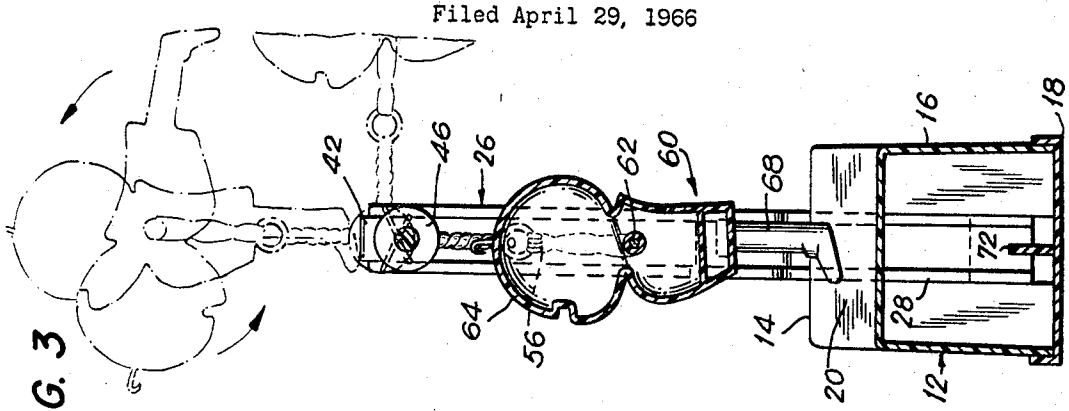


FIG. 3

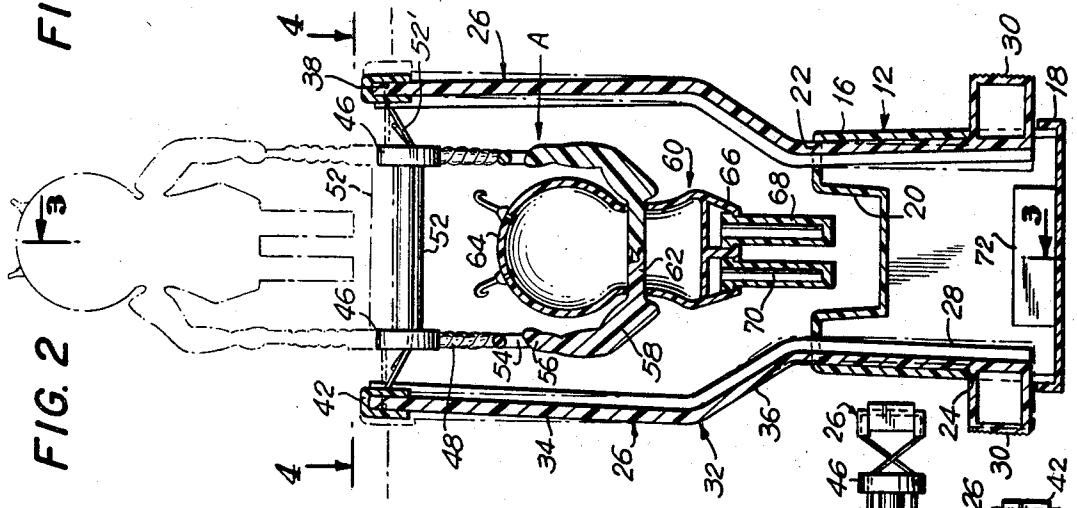


FIG. 2

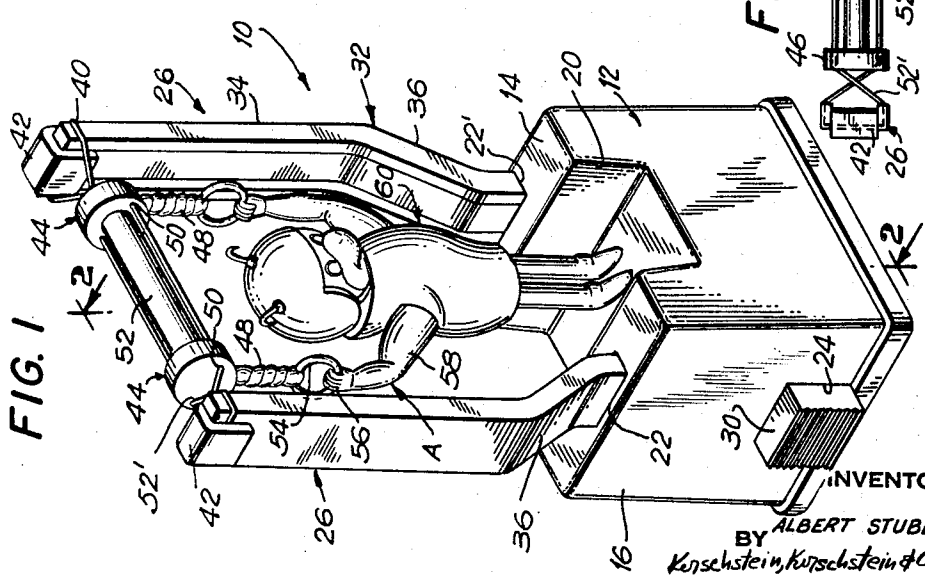


FIG. 1

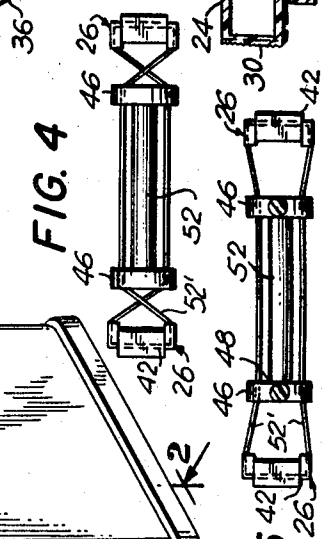


FIG. 4

FIG. 5

INVENTOR
ALBERT STUBBMANN
BY Kirschstein, Kirschstein & Ottinger
ATTORNEYS

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ACROBATIC TOY

Albert Stubbmann, Flushing, N.Y., assignor to Kohner Bros., Inc., East Paterson, N.J., a corporation of New York

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ABSTRACT OF THE DISCLOSURE

An acrobatic toy including a pair of pivotally supported upstanding members with a pair of strings extending between the upper ends of the members. A pair of spaced supports have the strings threaded through them. The supports have registered arms. The arms are erect when the bottoms of the members are squeezed together, and the arm swing to a pendent position when the bottom ends of the members are released. A single figure swings about a horizontal axis between the ends of the arms. The sections of the figure on opposite sides of the horizontal axis of swinging of the figure are slightly unbalanced with respect to one another, and are different in weight.

This invention relates to an acrobatic toy.

In general, the acrobatic toy to which the present invention pertains is of the type in which a pair of generally parallel transversely registered upstanding members are pivoted intermediate their ends, so that when their lower ends are pressed toward one another, their upper ends are forced apart. The toy is further characterized by the provision of a pair of limp elognated like elements such as strings suspended between the upper ends of the upright members, and of such length that when the lower ends of the upright members are urged toward one another the strings which previously were relaxed and sagging become taut and parallel. In addition, the toy includes a pair of spaced supports, each having a pair of openings at one end thereof through which the strings pass and each being pivotally connected at the other ends to aligned opposed points of a figure, for instance, a humanoid or animal figure. The strings are so interlaced with the supports that when the lower ends of the upright members are squeezed together the strings become taut and parallel and the supports extend upwardly from the strings. However, when the lower ends of the upright member are released and the strings are permitted to sag, the supports descend under the weight of gravity while the strings cross. Thus by squeezing the lower ends of the upright members the supports will be swung from a dependent position, in which the strings are crossed and the figure hangs below the strings to an erect position in which the figure hangs above the strings. When thereafter the lower ends of the upstanding members are released, the supports and figure will drop either to the front or the back of the strings, the front or forward position being a matter of chance.

In prior art toys of the character described a child's enjoyment has been principally derived from the movement of the figure from a position below the strings to a position partially above the strings, this being the only basic action that the toys were capable of performing. True, it has been conventional to also articulate the legs to the hips of the figure in order to permit the figure to cross over the taut strings and this provides a slight additional interest. However, such further movement is rather slight and accordingly toys of this nature do not provide sustained attraction for children.

It is an object of my present invention to provide a toy of the foregoing class which is so constructed that an additional type of movement is provided which is in keeping with the general acrobatic concept of the toy.

More specifically, it is an object of my invention to provide a toy of the character described in which the construction of the toy is such that when the figure is raised or lowered, it will, in addition to its oscillation about the string and independently thereof rotate about the pivotal connection between the supports and the figures. In other words, the new toy is characterized by a spinning motion of the figure when the figure is either raised or elevated upon squeezing or releasing of the lower ends of the upstanding members. This spinning action does not invariably and monotonously take place, but does occur with sufficient frequency to create a heightened interest in the toy.

It is a more specific object of my invention to provide a toy which is physically constructed to enable the foregoing effect to be produced and, in particular, a toy in which the length of the support is greater than the distance from the connection between the supports and figure to both ends of the figure.

Still further, it is a specific object of my invention to provided a toy which is so physically proportioned as to enhance the desired spinning action, this preferably being accomplished by approximately, but not exactly, balancing the sections of the figure above and below the connection of the figure to the supports. With the same object in view, the figure preferably is so proportioned that the concentration of weight of the heavier section of the toy is remote from the point of connection between the figure and the support, whereby to encourage a maximum duration of spinning action.

Previous toys of this general character customarily are plagued by a sluggish action of the figure and supports due to the mechanical disadvantage of the levers composed of the upstanding members.

It is another object of the present invention to make the figure act more briskly and in general this has been accomplished, while maintaining a reasonable size of the figure, by mounting the upstanding members for pivotal movement with a notch between the pivots through which the figure can swing when it descends upon release of the lower ends of the upstanding members.

It is another object of my invention to provide a toy of the character described which constitutes relatively few and simple parts, is easy to operate and can be made by mass production methods.

Other objects of my invention in part will be obvious and in part will be pointed out hereinafter.

My invention accordingly consists in the features of construction, combinations of elements and arrangements of parts which will be exemplified in the toy hereinafter described and of which the scope of application will be indicated in the appended claims.

In the accompanying drawings in which are shown one of the various possible embodiments of my invention,

FIG. 1 is a perspective view of an acrobatic toy constructed in accordance with and embodying my invention;

FIG. 2 is a vertical side-to-side central sectional view through the toy, the same being taken substantially along the line 2—2 of FIG. 1, and the various parts being shown in solid lines for the lowered position of the figure and in dot-and-dash lines for the elevated position of the figure;

FIG. 3 is a vertical front-to-back central sectional view through the toy, the same being taken substantially along the line 3—3 of FIG. 1, and the various parts being shown in solid lines for the lowered position of the figure and in dot-and-dash lines for various elevated, partially elevated and spinning positions of the figure;

FIG. 4 is a top plan view of the upper portion of the toy showing a crossed position of the strings when the

supports are pendent, and figure being taken along the line 4—4 of FIG. 2; and

FIG. 5 is a section taken along the line 4—4 of FIG. 2, but showing the taut parallel position of the strings when the supports are erect.

In both FIGS. 4 and 5 the supports and the figure, as well as the balance of the toy, have been omitted to facilitate understanding of the different positions of the strings.

Referring now in detail to the drawings, the reference numeral **10** denotes an acrobatic toy constructed in accordance with my invention. Said toy includes a hollow base **12** which may be of any aesthetically pleasing overall configuration. As shown here, for simplicity, the base is in the form of a slightly upwardly tapering frustum of a pyramid with a top wall **14**, side walls **16**, and an open bottom that is closed by a lid **18**. In practice, the lid is permanently secured to the side walls of the base as by a plastic cement. The top wall **14** is interrupted by a front-to-back central channel **20**, i.e., notch, the purpose of which will be explained hereinafter. On opposite sides of the channel the top wall is formed with a pair of front-to-back elongated parallel through openings, i.e., slots, **22** the edges of which constitute pivots for the upstanding members soon to be described. The right and left side walls (the walls parallel to the channel **20**) include registered holes **24** for passage of manipulating members later described.

The base can be fabricated from any suitable material. However, except where otherwise indicated, I prefer to employ for this part and for all of the other parts subsequently to be described a synthetic plastic material, either thermoplastic or thermosetting, to enable the toy to be made inexpensively by mass production methods, such, for instance, as injection molding.

Mounted on the base for pivotal movement relative thereto are a pair of generally parallel upstanding members **26**. One member passes through the left-hand slot **22** and the other through the right-hand slot **22**. The upstanding members function as first class levers, pivoting about the edges of the slots. The lower portion **28** of each member is located within the base **12** and terminates in a manually manipulatable button or the like **30** which extends laterally outwardly through the associated hole **24**. The upper portion **32** of each upstanding member is subdivided into an upper section **34** and a lower section **36**. The lower sections flare outwardly from one another so as to increase the space between the upper sections. The upper sections are generally parallel and are approximately perpendicular to the top wall of the base. The closeness to perpendicularism increases when the buttons **30** are squeezed together, and said upper sections increase their convergence when pressure on the buttons is released. Although the upstanding members can be of any suitable cross-section for instance, simply rectangular, in order to conserve material and at the same time to maintain rigidity, said members may be of channel cross-section with the base of the channel outermost and with the side flanges extending inwardly, i.e., so that the open sides of the channel-shaped upstanding members face one another. The channel-shaped members are in transverse registry and their axes of pivoting with respect to the base **12** are parallel and are also parallel to the length of the channel **20**.

A narrow shallow slot **38** is provided near the tip of each upstanding member, said slot being located on the exterior of the outwardly facing base of said member and continuing around the exterior of the flanges of said member. Said slot is deep enough to receive a string **40** and provides a definite site for connection between the string and each upstanding member.

The string **40** is in the form of an endless band and is of a suitable limp, preferably inelastic, material such, for instance, as cotton string. Opposite ends of the string band are disposed in the slots **38** at the tips of the two upstanding members and the remaining portions of the band form a pair of reaches that run between said upstanding members. The length of the string in the band is so chosen that when the manually manipulatable buttons **30** are squeezed toward one another for a short distance, as illustrated, for example, by the solid and dot-and-dash lines in FIG. 2, said reaches of the band will become taut and parallel. However, when pressure on the buttons is released, the length of the reaches between the upstanding members will sag. In addition, upon release of pressure the reaches will cross oppositely at two points, each adjacent a different upstanding member. The reason for the crossing is the lowering of supports **44** soon to be described.

Any suitable means is included to anchor the ends of the string band to the tips of the upstanding members **32**. Such means may constitute, for example, cementing the string band in place or applying heat and pressure to the upstanding members so as to fuse them to the ends of the string band. Another simple form of anchoring means is shown in the attached figures and constitutes a different U-shaped resilient clip **42** associated with each upstanding member. The base of the clip is seated on the top of the upstanding member. The inner arm of the clip resiliently engages the inner side of the channel cross-section of the upstanding member and the outer arm of the clip resiliently engages the exterior face of the base of the upstanding member. Said outer arm of the clip bridges the slot in this exterior face and thereby prevents the end of the string from leaving the slot. The space between the arms of the relaxed clip is less than the thickness of the base of the upstanding member so that the clip will prehensilely engage the upstanding member and maintain itself in place. This arrangement has the advantage that it enables the lengths of the two reaches of the string band to automatically equalize themselves each time that the toy is manipulated, whereas if the strings were rigidly anchored to the upstanding members, each reach might initially be somewhat longer than the other or during operation might stretch to a somewhat greater length than the other. Inequality of lengths of the reaches would lessen the briskness of operation of the toy.

The toy also has a pair of supports **44**. Each support includes a disc **46** from which there radially extends a rod **48**. Each disc is formed with a pair of diametrically opposed openings **50** through which the reaches of the string are threaded. Means also preferably is included to assist in maintaining the supports **44** in spaced apart locations. Said means conventionally assumes the form of a shaft **62** to the opposite ends of which the supports are integrated.

The supports further include unitary extensions of the rods **48** which extensions customarily will constitute representations of the upper limbs of an animal or human figure. In the particular toy illustrated the supports are additionally designed to resemble a trapeze. Hence, at the bottom end of each rod, I fashion a trapeze ring **54**, the ring being a rigid part of the rod. Furthermore, rigidly interconnected to the ring at a point on the ring diametrically opposed to the point of connection to the rod is the hand **56** and arm **58** of the figure employed. The rod **48**, ring **54**, hand **56** and arm **58** are a single rigid piece which structurally constitute what hereinabove has been referred to as a radially extending arm A. The openings **50** in the supports are so oriented that when the reaches are taut and parallel the arms are parallel and erect.

The supports are connected to a figure **60**, the connection being one that permits full rotational movement between the arms A and the figure. For this purpose the distal ends of the arms, that is to say, the ends remote from the string, include spindles **62** that extend approximately perpendicularly from the lower ends of the arms into the figure. The spindles are matchingly shaped, as with a pin and socket and matingly interengaged. These

ends may be permanently interconnected in a finished toy as with the use of cement. The spindles thus form a single shaft extending horizontally through the figure and about which the figure is free to rotate. The shaft is substantially entirely concealed within the figure and the figure is formed with a lateral opening to receive the shaft. To increase realism, the opening in the figure is located at approximately the shoulders of the figure. However, this is not necessary since a wide variety of positions may be designed and used.

For economy and lightness, the figure preferably is hollow, i.e., simply constitutes a shell. The figure may be of any desired form, animal or human, and in any desired attitude. However, the figure is basically characterized by the presence of two sections, to wit, an upper section **64** and a lower section **66**, these constituting the portions of the figure above and below the spindle **62** when the figure is erect. Typically, the upper section of the figure will include the neck, face and head, and the lower section of the figure will constitute the torso and legs. In the figure I have illustrated, the legs **68** are molded separately from the body.

As an essential element of the present invention a specific ratio of weight distribution is employed for the figure. This is such that the upper section and lower section are of approximately but not exactly the same weight, the difference in weight desirably not exceeding twenty grams. One section is always heavier than the other within the range of from slightly more than zero (e.g. one gram) to twenty grams. The section which is the heavier is the section which it is desired to have depend from the spindle when the buttons **24** are not squeezed, as shown, for example, in FIG. 1. This section, in the illustrated figure, is the section including the torso and legs.

Upon occasion, and depending upon the conformation of the figure employed, the section desired to be lower will be the heavier without making any provisions to that end. However, in the figure shown, due to an oversized head and the presence of a helmet on the head, the upper section is heavier than or almost equal to the weight of the lower section. Hence, to ensure that the lower section is heavier, the hollow legs **68** have embedded in each of them a slender metal rod **70**. The weights of the rods are such that the lower section is less than twenty grams heavier than the upper section. It also will be observed that the weights as thus described are placed in a part of the lower section which is furthest from the spindle. This will increase the moment of inertia of the figure so that once it is set spinning it will continue to spin through several turns, e.g., ten.

To minimize abuse of the toy a stop flange **72** is molded in one piece with the lid **68** in a position to extend only a part of the way between the inner faces of the lower ends of the upstanding members. The stop flange is centered between the sides of the base and its ends are spaced apart a distance slightly less, e.g., an eighth of an inch less, than the distance between the lower ends of the upstanding members when the reaches of the string are taut.

Attention is directed to the fact that a figure **60** of appreciable height is employed, so that when the buttons **30** are not squeezed, the figure occupies a substantial portion of the vertical distance between the string and the base. Thus, the toy is not disproportionately small, i.e., the toy is not much shorter than the length of the upper portions of the upstanding members, as is characteristic of most squeeze toys of this type. This use of a large figure is permitted by the presence of the notch **20** between which the legs of the figure swing when the buttons are not squeezed. Moreover, the distances from the spindles **62** to the tips of the upper and lower sections **64**, **66** of the figure are such that they are less than the distance from the spindles to the strings. This proportion is unusual in a squeeze-type toy and has been selected to enable the figure to spin in the manner now to be described.

To use the toy a child simply alternately squeezes and releases the buttons **30**. When the buttons **30** are released, the toy is in the position shown in FIGS. 1, 2 and 4 (solid lines in FIG. 2). At this time the portions **34** of the upstanding members **26** above the pivots are inwardly converging, the convergence being sufficient to allow the reaches of the string band **40** between the ends thereof to sag. The portions of the reaches between the discs **46** are parallel. However, the portions of the string band between each disc and the tip of the adjacent upstanding member are crossed, the crossing at opposite ends being in opposite directions. The arms A are in their pendent position so that the figure is below the string band. Moreover, since the lower section **66** of the figure is slightly heavier than the upper section, the figure will be in its desired stance, in this case, upright, i.e., legs lowest. The figure also will be quiescent.

When the buttons **30** are squeezed toward one another, the upper portions **34** of the upstanding members **26** will move apart to the dot-and-dash line position shown in FIG. 2 at which time they are almost parallel and at which time the reaches of the string band **52** will be taut. Tautening of the reaches brings them into substantial parallelism, that is to say, uncrosses the crossed parts, this being illustrated in FIG. 5. Uncrossing of the crossed parts rotates the arms A 180° to turn them from their pendent position, shown in solid lines in FIGS. 1 and 2, to their erect positions shown in dot-and-dash lines in FIGS. 2 and 3.

Thus far the only motion of the figure is a conventional one, to wit, from a low to an elevated position. However, when the figure is swung to an elevated position, due to the unequal distribution of weight therein, the figure will tend to rotate about the spindles. Heretorfore, any such tendency has not resulted in spinning the figure about the spindles for various reasons. In the present toy, however, I encourage this tendency and permit it full play by virtue of several factors.

For one, by having the upper and lower sections of the figure of almost the same weight, the figure will tend to continue, rather than to stop, its rotation because the torque opposing rotation at the vertical part of the rotary cycle is not sufficiently great to prevent the full 360° of rotation. Also, by having the mass of the weight of the heavier sections spaced a substantial distance from the spindles the moment of inertia is increased and this too encourages continuance of rotation. Furthermore, by having the distance from the spindles **62** to opposite ends of the figure less than the distance between the spindles and the strings, the figure will not strike the strings as it turns and thus impede rotation. As a consequence of all these factors, each time that the buttons are pressed and the supports oscillated to erect position, there will be a tendency to rotate the figure. Upon occasion the figure will not rotate because of a counterbalancing of moments, but the spinning will occur more frequently than not. Furthermore, when after having been raised, the supports are allowed to descend upon release of the buttons, the same spinning frequently will take place.

Moreover, due to the reduction of the mechanical advantage between the upper and lower ends of the upstanding members, the figures moves with alacrity rather than with the sluggishness which usually has attended motion of the figure heretofore.

It thus will be seen that I have provided an acrobatic toy which achieves the several objects of my invention and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention and as various changes might be made in the embodiment set forth, it is to be understood that all matter herein described or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. An acrobatic toy comprising a pair of generally parallel transversely registered upstanding members, means pivoting said members about parallel transversely registered pivotal axes intermediate their ends and perpendicular to the length thereof whereby when the lower ends of the members are squeezed the upper ends of the members will move apart, a pair of string reaches above and parallel to the space between the pivotal axes, means connecting said reaches to the upper ends of the upstanding members, said reaches being so dimensioned and arranged that when the lower ends of the upstanding members are squeezed the reaches are taut and parallel, a pair of spaced supports having mutually spaced openings therethrough through which the strings are threaded, each of said supports including registered radially extending arms which are erected in elevated position when the bottom ends of the upstanding members are squeezed and the reaches are taut and parallel, and which swing to a lower pendent position when the bottom ends of the upstanding members are released and the reaches sag, a single figure between the arms, and means horizontally rotatably mounting the figure on the arms: characterized in that the sections of the figure on opposite sides of the rotatable mounting means are slightly unbalanced with respect to one another and different in weight, and in that the distance from the rotatable mounting means to opposite ends of the figure is less than the distance from the rotatable mounting means to the reaches, whereby when the lower ends of the upstanding members are moved between released and squeezed positions the arms will be swung between pendent and erect positions and the figure will spin between said arms through several revolutions.

2. A toy as set forth in claim 1 wherein the difference in weights of the two sections of the figure is between 1 and 20 grams.

3. A toy as set forth in claim 1 wherein one section of the figure includes an added weight to render it heavier than the other section.

4. A toy as set forth in claim 3 wherein the added weight is remote from the means rotatably mounting the figure on the arms.

5. A toy as set forth in claim 3 wherein the figure includes legs, and wherein the added weight is in the legs.

6. A toy as set forth in claim 1 which further includes a hollow base, the means pivoting said upstanding members being provided in the top wall of the base and opposed side walls of the base having holes therein, the lower ends of the upstanding members having buttons integral therewith which extend outwardly perpendicular to said registered members through said holes to be readily squeezed toward one another by a user of the toy.

7. A toy as set forth in claim 6 wherein the base includes internal means limiting squeezing of the buttons toward one another.

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LOUIS G. MANCENE, *Primary Examiner.*

ROBERT F. CUTTING, *Assistant Examiner.*