United States Patent

Tepper et al.

[15] **3,672,082**

[45] **June 27, 1972**

[54] WALKING MECHANISM FOR A DOLL

[72] Inventors: **Sidney Tepper,** Millburn; **William Tierney,** Bellville; **Nicholas Lilinga,** Montclair, all of N.J.

[73] Assignee: **Topper Corporation**

[22] Filed: **Oct. 20, 1970**

[21] Appl. No.: **85,847**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 55,909, July 17, 1970.

[52] **U.S. Cl.** .....**40/106.36,** 46/149, 46/245, 272/31 R

[51] **Int. Cl.** **G09f 19/08**

[58] **Field of Search** .....40/106.36, 106.34, 106.31, 40/106.3; 272/37, 31 P; 46/110, 122, 140, 149, 137, 138, 245

[56] **References Cited**

UNITED STATES PATENTS

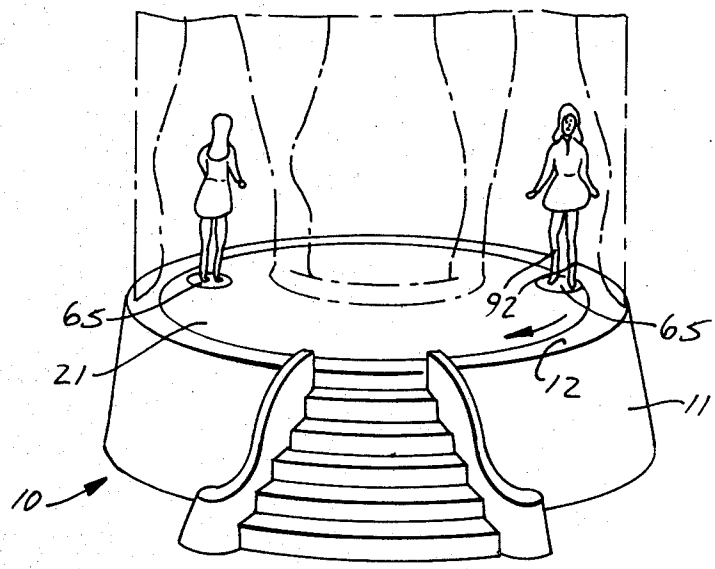
1,615,663	1/1927	Varga	46/140
1,090,207	3/1914	Hardin	40/106.36 X
1,439,640	12/1922	Rommer	40/106.31
1,439,641	12/1922	Rommer	40/106.36 X
2,066,239	12/1936	Tansler	46/140
1,371,528	3/1921	Van Kannel	272/37
2,942,378	6/1960	Ellis	46/122 X

Primary Examiner—Robert W. Michell
Assistant Examiner—Richard Carter
Attorney—Breitenfeld & Levine

[57] **ABSTRACT**

A mechanism including a support and two elements carried by the support for engaging the legs of a doll. The support carries a pivotable arm, and slots in the support and arm cross each other. A pin connected to each element passes through both slots, and the arm oscillates with respect to the support by engaging stationary abutments along the path of travel of the support. An upwardly concave guide surface on the support causes the elements to move along an arcuate path.

11 Claims, 8 Drawing Figures



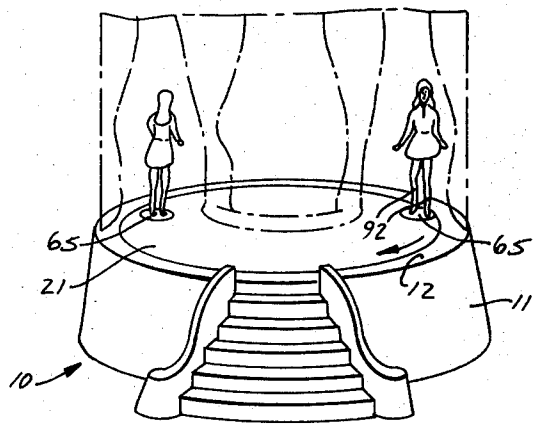


FIG. 1

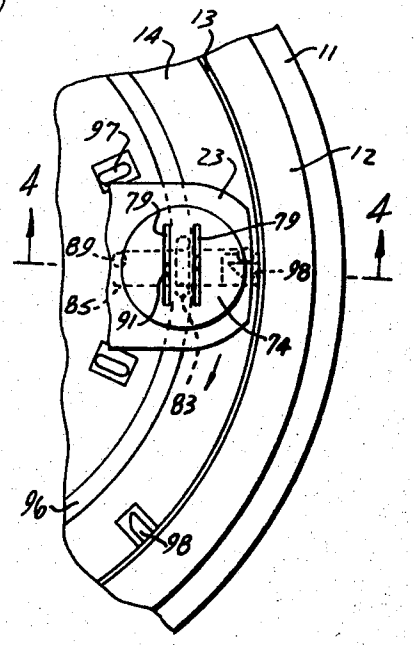


FIG. 2

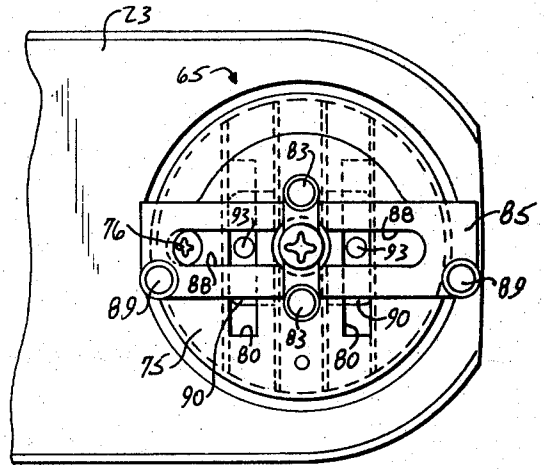


FIG. 3

INVENTORS:
SIDNEY TEPPER
WILLIAM TIERNEY
NICHOLAS LALINGA
BY
Breitenfeld & Levine
ATTORNEYS

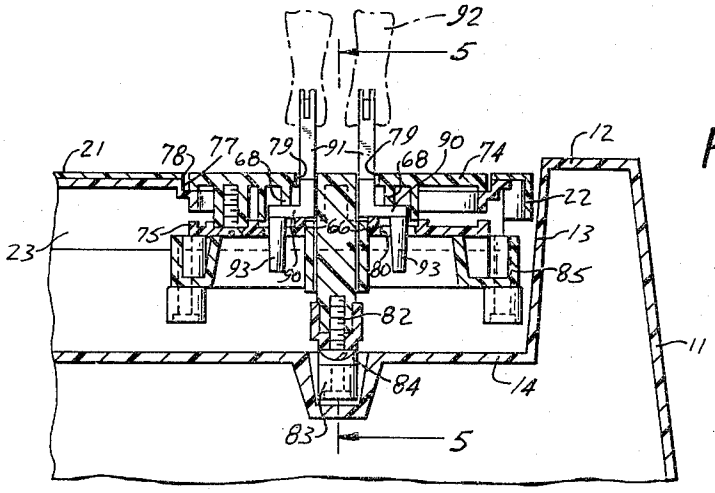


FIG. 4

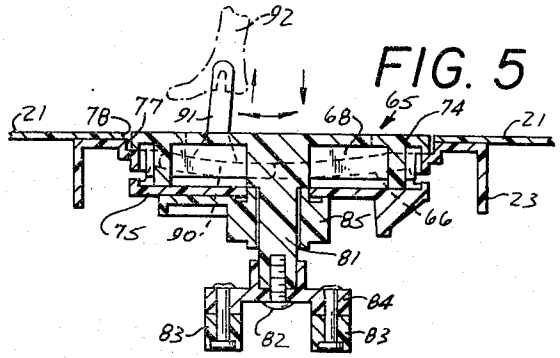


FIG. 5

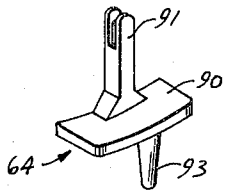


FIG. 8

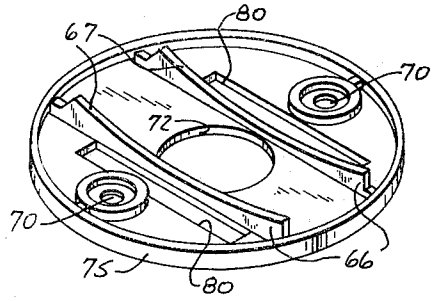


FIG. 6

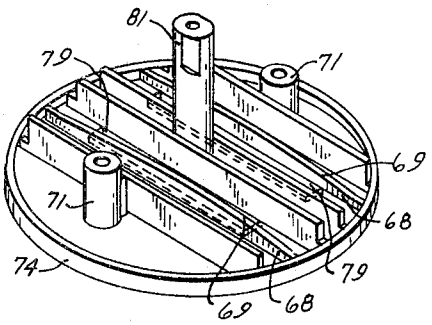


FIG. 7

INVENTORS:
SIDNEY TEPPER
WILLIAM TIERNEY
NICHOLAS LALINGA
BY
Breitenfeld & Levine
ATTORNEYS

WALKING MECHANISM FOR A DOLL

This application is a continuation in part of copending application Ser. No. 55,909, filed July 17, 1970.

This invention relates to a walking mechanism for a doll, and more particularly to such a mechanism located outside the doll and upon which the doll is mounted.

It is an object of the invention to provide a mechanism by means of which a doll, having no self-contained mechanism for causing it to simulate walking, may nevertheless be animated.

It is another object of the invention to provide a mechanism which need only be provided with translational movement in order for it to cause a doll mounted on it to appear to walk.

It is another object of the invention to provide a walking mechanism for use with a doll having legs pivoted to its body, the mechanism engaging the doll's feet and moving the feet along an arcuate path.

Additional objects and features of the invention will be apparent from the following description in which reference is made to the accompanying drawings.

In the drawings:

FIG. 1 is a perspective view of a toy including a walking mechanism according to the present invention;

FIG. 2 is a fragmentary top view, with parts broken away, of the portion of the toy incorporating the walking mechanism;

FIG. 3 is a bottom view of the doll support;

FIG. 4 is a vertical cross-sectional view taken along line 4—4 of FIG. 2;

FIG. 5 is a fragmentary vertical cross-sectional view taken on line 5—5 of FIG. 4;

FIG. 6 is a perspective view of one of the disks forming the doll support;

FIG. 7 is a perspective view of the other disk forming the doll support, this disk being shown upside down with respect to its position when in use; and

FIG. 8 is a perspective view of a doll engaging element.

The toy chosen to illustrate this invention is a simulated fashion show in which dolls model miniature clothing.

The dolls are of the type in which each leg 92 is pivotally secured to the body of the doll.

The toy includes a housing, indicated generally by the reference numeral 10 in FIG. 1, having an external wall 11 (FIGS. 1, 2, and 4) of generally frusto-conical shape. At its upper edge, housing wall 11 is joined by a relatively narrow horizontal annular top wall 12. Extending downwardly from the inner edge of top wall 12 is an inner wall 13 (FIGS. 2 and 4) surrounding a circular cavity in the top of housing 10. The lower edge of inner wall 13 meets a bottom wall 14 of the cavity. Bottom wall 14 may carry a motor, batteries, and transmission means (all not shown) for rotating a stage.

The rotatable stage means includes a flat circular platform 21, having a depending peripheral lip 22 (FIGS. 1, 4, and 5; in FIG. 2 the platform has been removed), loosely accommodated within the circular cavity in the top of housing 10. Platform 21 is supported on a stage base 23 (FIGS. 2–5) comprising an elongated plate, having a depending peripheral lip, extending across a diameter of the cavity in the top of housing 10. In FIGS. 2–4, only one end of base 23 is shown. Suitable means (not shown) are provided to cause platform 21 to rotate with base 23.

A doll support and walking mechanism 65 is carried at each end of stage base 23. The two supports and walking mechanisms 65 are identical, and hence only one is shown and will be described. Each doll support comprises a pair of upper and lower disks 74 and 75, respectively, held together by screws 76, which pass through holes 70 in bottom disk 75 and are threaded into posts 71 of upper disk 74. The disks are rotatable with respect to base 23, and engage each other through a hole 77 (FIGS. 4 and 5) in the base. Upper disk 74 slidably rests on the edge of hole 77, and projects upwardly through an opening 78 in platform 21, so that the upper face of disk 74 is substantially flush with the upper face of platform 21. A stud 81 projects downwardly from upper disk 74,

through a hole 72 in lower disk 75, and fixed to the stud, by a screw 82, is a horizontal arm 84 carrying a follower pin 83 at each end. Arm 84 is fixed to disks 74 and 75, via stud 81 and screws 76, so that rotation of arm 84 causes rotation of the disks. Pivotally supported on stud 81, above arm 84, is another arm 85, having a pair of longitudinally aligned slots 88 and carrying a follower pin 89 at each end.

Upper disk 74 is provided with two parallel slots 79, and lower disk 75 is also provided with two parallel slots 80. Slots 79 and 80 are all parallel to one another, but slots 80 are spaced farther apart from each other than are slots 79. Since arm 85 can pivot with respect to disks 75, its slots 88 can be positioned to cross slots 80, as best seen in FIG. 3. Adjacent to each slot 80 in lower disk 75 is a ridge 66 (FIGS. 4–6) the upper edge 67 of which defines an upwardly concave guide surface. Similarly, adjacent to each slot 79 in upper disk 74 is a ridge 68 (FIGS. 4, 5, and 7) the lower edge 69 of which also defines an upwardly concave guide surface, i.e., a downwardly convex guide surface.

Two doll engaging elements 64 (FIGS. 4, 5, and 8) are carried by each doll support 65. Each element includes a dished horizontal central part 90, substantially conforming in curvature to the curvature of guide surfaces 67 and 69, from which an element 91 for engaging a doll's leg projects upwardly through one of the slots 79 in upper disk 74. In the present example, the element 91 fits frictionally into a bore extending longitudinally from the foot into each doll leg 92 as indicated in FIGS. 4 and 5. Thus, by pushing the legs of a doll on to the elements 91, the doll can be supported upright on toy support 65.

A pin 93 projects downwardly from each central part 90, through a slot 80 in lower disk 75 and a slot 88 in arm 85. It will be appreciated, upon inspection of FIG. 3 that pivotal movement of arm 85 in one direction will cause one of the pins 93 to move in one direction along its respective slot 80 and simultaneously will cause the other pin 93 to move in the opposite direction along its respective slot 80. Pivotal movement of arm 85 in the other direction will cause the reverse effect. Thus, by oscillating arm 85, pins 93 and hence the two elements 91 are moved back and forth in opposite directions, whereupon the doll legs 92 are similarly moved with the result that the doll simulates walking.

As may be seen best in FIGS. 4 and 5, the central part 90 of each element 64 is slidably arranged between a ridge 66 and a ridge 68, the two ridges being laterally spaced apart so as to stabilize element 64 against lateral tilting. Due to the curvature of guide surfaces 67 and 69, of ridges 66 and 68, respectively, along which the central part 90 of element 64 slides each element 64 moves along an arcuate path having a center of curvature located above doll support 65, in response to oscillation of arm 85. Theoretically, the center of curvature should coincide with the axis about which each doll leg 92 pivots with respect to the doll body. However, as a practical matter precise coincidence is not necessary, as long as the center of curvature of the path followed by each element 64 is close enough to the pivot axis of the doll legs 92 to prevent elements 91 from slipping out of the bores in the bottoms of the doll legs. It has been found that if guide surfaces 67 and 69 are straight so that elements 64 move along horizontal paths, instead of curved paths, elements 91 have a tendency to be pried out of the bores in legs 92.

Formed in the housing bottom wall 14 is a circular guide groove 96 (FIGS. 2 and 4) slidably accommodating follower pins 83 depending from each doll support. Bottom wall 14 has stationary abutments 97 and 98 (FIG. 2), constituting the means for oscillating arm 85, abutments 97 being on the inside of the groove and abutments 98 being on the outside. The abutments on each side are spaced apart, and staggered with respect to the abutments on the opposite side of the groove. Abutments 97 and 98 are in the path of movement of followers 89 carried by arm 85 as stage base 23 rotates. Thus, during such rotation, one follower 89 of arm 85 will engage an abutment 98, as shown in FIG. 2, causing arm 85 to pivot in a

counterclockwise direction. After some additional movement of base **23**, the follower **89** just mentioned leaves the abutment **98** just mentioned, and the other follower **89** of arm **85** engages an abutment **97**, thereby causing arm **85** to pivot in a clockwise direction. In this way, arm **85** is caused to oscillate, producing the simulated walking of the doll mentioned above. Location of followers **83** in the guide groove prevents rotation of disks **74** and **75** during oscillation of arm **85**.

It will be seen, therefore, that simply by giving the doll support and walking mechanism **65** translational movement, a doll mounted on the support will appear to walk along the path through which the doll support is moved. In the present example, translational movement is along a circular path. However, the path may be straight, or of any other shape.

The invention has been shown and described in preferred form only, and by way of example, and many variations may be made in the invention which will still be comprised within its spirit. It is understood, therefore, that the invention is not limited to any specific form or embodiment except insofar as such limitations are included in the appended claims.

What is claimed is:

1. A walking mechanism for a doll, comprising

a. a support,

b. a pair of elements for engaging the legs of a doll, said elements being carried by said support and movable with respect thereto, said elements being movable along substantially parallel paths,

c. means carried by said support for moving each of said elements in two opposite directions with respect to said support, and for moving each of said elements in a direction opposite to the direction of movement of the other, and

d. at least one upwardly concave guide surface for each of said elements for causing the latter to move along an arcuate path having a center of curvature located above said support.

2. A walking mechanism as defined in claim **1** including means for moving said support along a predetermined path, and stationary means along said path for cooperating with said means (c) to move said elements.

3. A walking mechanism as defined in claim **2** wherein said stationary means include abutments spaced apart along the length of said path, each two successive abutments being on opposite sides of path, and said means (c) includes a pivotable arm, said elements moving in response to pivotal movement of said arm, and said arm being oscillated by successive engagements with said abutments as said support moves along said path.

4. A walking mechanism as defined in claim **2** wherein said support is rotatable with respect to said means for moving said support along a predetermined path, and including a follower depending from said toy support, said follower being non-rotatably connected to said toy support, and a stationary guide means along the path of travel of said toy support as said stage means rotates, said guide means slidably and non-rotatably accommodating said follower to prevent rotation of said toy support as a result of the engagement between said animating means and said stationary means.

5. A walking mechanism as defined in claim **1** wherein said support includes at least one slot, said means (c) includes an arm pivoted to said support at a point spaced from said slot, said arm having a slot crossing the slot in said support, and a pin connected to each of said elements, said pin projecting through said slots and being slidable therein, swinging movement of said arm causing said pin to move along the lengths of both slots to thereby move its respective element.

6. A walking mechanism as defined in claim **5** including means for moving said support along a predetermined path, stationary abutments spaced apart along the length of said path, each two successive abutments being on opposite sides of said path, and said arm being oscillated by successive engagements with said abutments as said support moves along said path.

7. A walking mechanism as defined in claim **1** wherein said support includes upwardly and downwardly projecting ridges, the upper edge of said upwardly projecting ridge and the lower edge of said downwardly projecting ridge being spaced apart and each said edge defining one of said upwardly concave guide surfaces, and a member carrying each of said elements, said members being slidable between said upper and lower ridge edges.

8. A walking mechanism as defined in claim **7** wherein said ridges are spaced apart laterally.

9. A walking mechanism as defined in claim **7** including a first opening along one side of said downwardly projecting ridge, a second opening along the opposite side of said upwardly projecting ridge, one of said elements projecting through said first opening, a pin carried by said member projecting through said second opening, and means engaging said pin for sliding said member and hence said element along said ridge edges.

10. A walking mechanism for a doll, comprising

a. a support,

b. a pair of elements for engaging the legs of a doll, said elements being carried by said support and movable with respect thereto, said elements being movable along substantially parallel paths,

c. means for moving said support along a predetermined path,

d. abutments spaced apart along the length of said path, each two successive abutments being on opposite sides of said path, and

e. an arm pivoted to said support and adapted to engage said abutments, said elements moving in response to pivotal movement of said arm, and said arm being oscillated by successive engagements with said abutments as said support moves along said path.

11. A walking mechanisem as defined in claim **10** wherein said support includes at least one slot, said arm being pivoted to said support at a point spaced from said slot, said arm having a slot crossing the slot in said support, and a pin connected to each of said elements, said pin projecting through said slots and being slidable therein, swinging movement of said arm causing said pin to move along the lengths of both slots to thereby move its respective element.

* * * * *