ABSTRACT OF THE DRAWINGS

FIG. 1 is a perspective view of a doll constructed in accordance with the present invention;

FIG. 2 is a partial perspective view of the doll of FIG. 1 showing the torso section with the front cover removed;

FIG. 3 is a partial front view showing the oscillator bar of the mechanism shown in FIG. 2;

FIG. 4 is a front view of the mechanism shown in FIG. 2;

FIG. 5 is a rear view of the front torso housing;

FIG. 6 is a partial sectional side view of the doll of FIG. 1;

FIG. 7 is a partial sectional rear view of the torso section of the doll of FIG. 1;

FIG. 8 is a partial sectional front view of a doll constructed in accordance with another embodiment of the invention, wherein the doll's arms alternately swing back and forth; and

FIG. 9 is a partial perspective view of another embodiment of the invention, wherein the doll operates a paddle ball.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 illustrates a doll with a torso 10, legs 12, 14 and arms 16, 18. The doll torso includes a driving mechanism which can sway the torso and head thereon from side to side to allow the legs to alternately raise above the ground. The legs are supported on the driving mechanism so that they pivot forward each time they are raised above the ground, to cause the doll to take a forward step and thereby walk. The arms are pivotally mounted on the torso, and one of the arms 16 has a support shaft which can be coupled to the torso driving mechanism so that it pivots the arm up and down in the direction of arrows at 20. The hand 22 is fashioned to hold one end of an elastic string 24 whose other end is joined to a disc 26 representing a yo-yo. As the doll's arm pivots up and down, the yo-yo disc bounces up and down between the hand and ground to simulate a child playing with a yo-yo. A switch on the rear of the doll can be operated to change the doll between an "off" state, a "walk" state wherein the doll walks but its arm 16 does not pivot, and a "yo-yo" state wherein the doll does not walk but its arm pivots up and down. The doll's hand 22 is formed so that, as shown in FIG. 9, it can hold a paddle 11 with a ball 13 coupled thereto by an elastic string 15 instead of the yo-yo, to simulate a child playing with a paddle ball. As shown in detail in FIGS. 2–7, the driving mechanism 28 includes a frame 30 on which are mounted leg couplings 32 and 34 that are attached to the legs 12 and 14. An electric motor 36 powered by batteries in a battery case 38 drives a gear train including a gear 40 with an off center pin 42. An oscillator bar 44 has one end pivotally mounted at 46 on the frame and an opposite end portion 48 which is free to pivot about 46. A slot 50 in the oscillator bar receives the off center pin 42 to enable the pin to pivot the bar back and forth. An actuator member 52 is coupled to the torso housing to resist side-
ward movement, as will be described below, although it can move forward and backward in the direction of arrows 54. When the actuator member 52 is moved in the rearward direction toward oscillator bar 44, a rear lug 56 on the actuator member engages a slot 58 in the oscillator bar. This couples the oscillator bar 44 through the actuator member 52 to the torso so that both of them swing sidewardly together. Thus, when the lug 56 is engaged in slot 58, the oscillator bar 44 drives the torso from side to side, thereby causing the doll to walk.

The actuating member 52 can be moved in a forward direction, so that the lug 56 disengages from the slot 58 in the oscillator bar. This frees the bar to pivot from side to side relative to the torso, so that the torso does not swing and the doll does not walk. In order to assure full oscillating movement of the bar within the torso, the frame 30 of the driving mechanism should be fixed to the torso when the actuator bar is not coupled to it. This is accomplished by a lower lug 60 on the actuator member, which engages a slot 62 formed in the frame to fix the frame against swinging sidewardly with respect to the torso. With the torso fixed to the driving mechanism frame 30, the oscillating bar 44 is maximally oscillating within the torso, the oscillations of the bar can be coupled to the arm 16 to pivot it up and down.

As shown in Fig. 4, the housing of the arm 16 is fixed to an armature 64 that is mounted on an arm shaft 66. A pair of bearings 68 and 70 on the doll torso pivotally support the arm shaft. A driving pin 72 is also fixed to the arm shaft to receive driving forces from the oscillator bar 44 to pivot the arm up and down. The oscillator bar has an arm driving slot 74 at its upper end which is angled about 45° from the direction of movement of the outer end of the bar. The angle is chosen in accordance with the amount of arm movement desired. The driving pin 72 on the arm shaft is engaged with the arm driving slot 74. As the bar 44 pivots from side to side, the walls of the slot 74 move the pin 72 up and down, thereby causing oscillatory pivoting of the arm shaft 66 and the arm 16 mounted on it. Of course, the arm will not pivot unless the oscillator bar 44 is moving from side to side relative to the torso. When this occurs, the oscillator bar generally is not moving the torso from side to side in a substantial amount and therefore the doll is not walking. Accordingly, in one mode of operation, when the oscillator bar pivots relative to the torso, all of the power from the driving mechanism is used to pivot the arm 16 up and down to simulate operation of the yo-yo. On the other hand, when the oscillator bar 44 is fixed to the torso, by moving the actuator member 52 rearwardly into the bar, the bar does not move relative to the driving pin 72 and no up and down oscillation of the doll’s arm occurs. In this case, all of the power from the driving motor is used to sway the doll from side to side to cause it to walk.

The actuating member 52 is slideably mounted in a slider bearing 76, best shown in Fig. 5, that is mounted on the front portion 78 of the torso housing. The actuating member is mounted so that the lower lug 60 protrudes downwardly from the bearing, to enable it to engage the slot 62 of the driving member frame when the actuating member is in the forward position. Movement of the actuating member 52 forward and backward is accomplished by operation of a control lever 80, and is best accomplished when the motor is on. As shown in Fig. 2, the control lever 80 is pivotally mounted at 81 on the battery case 38, which is in turn mounted on the rear portion 82 of the torso housing. A pin 84 at the upper end of the actuating member is engaged in a slot 86 of the control lever. An operating slot 56 of the control lever protrudes through a slot in the rear of the torso housing. When the operating end of the control lever is moved in the direction of arrow 90, the walls of slot 86 in the control lever pulls the pin 84 to the rear. This moves the actuator member 52 to the rear, causing the rear lug 56 to engage the oscillating bar 44 and thereby cause walking movements of the doll. When the operating end 88 of the lever is moved in a direction opposite to arrow 90, the actuating member is pushed forward so that lug 56 disengages lever 44, while bottom lug 60 engages the slot 62 in the driving mechanism frame. The oscillating lever 44 is then free to pivot from side to side and drive the arm shaft pin 72 to pivot the arm 16 up and down. In order to better guide the actuating member 52 in back and forth motion, a pair of guides 92 are formed near its upper end, that engage a guide slot 94 formed at the top of the battery case.

As shown in Fig. 7, the operating end 88 of the control lever can be moved between three lateral positions designated on the case. One of these is the "off" position wherein the electric motor is de-energized, another is the "walk" position wherein the oscillating bar is coupled to the torso to sway it from side to side for doll walking, and the third is the "yo-yo" position wherein the oscillating bar is free to pivot relative to the torso so the doll’s arm pivots up and down. Control of movement of the lever is accomplished through a pair of electrical conductors 96 and 98 which are electrically connected in series with batteries within the battery case and with the driving motor. One of the conductors 96 is a resilient member which is biased toward an upward position wherein its end 100 is away from the end 102 of the other conductor. However, when the operating end 88 of the lever is moved from the off position to the walk position, it deflects the conductor 96 downwardly so that its end 100 contacts the end 102 of the other conductor. When the operating end 88 of the lever is moved even further to the yo-yo position, it continues to downwardly deflect the conductor 96 into electrical contact with the other conductor. Thus, at any position to the right of the off position, the motor circuit is completed and the motor operates.

The oscillator bar can be used to perform doll movements other than merely moving one arm up and down. One other movement is to swing both arms back and forth, which can be accomplished by the mechanism illustrated in Fig. 8. The mechanism of this figure is identical with the apparatus described above, except that an additional end portion 104 is provided on the oscillator bar 44A, the end portion 104 being coupled through a pin 106 to a shaft 108 on which the other doll arm 118A is mounted. When the bar 44A pivots from side to side, both arms 16A and 18A pivot up and down, or back and forth depending upon the initial orientation of the arms. Other doll moving mechanisms can also be employed which can be driven by the oscillator bar when it is uncoupled from the torso. If it is desired to pivot the arms while the doll is walking or takes steps in place, a mechanism can be employed which couples the frame to the arms to move them, while the bar is fixed to the torso to pivot it.

Although particular embodiments of the invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those skilled in the art, and consequently, it is intended that the claims be interpreted to cover such modifications and equivalents.

What is claimed is:
1. A doll comprising:
a torso;
a pair of legs;
driving means including frame means coupled to said legs, oscillator bar means mounted on said frame means, and means for moving said bar means relative to said frame means;
a doll arm means for coupling said oscillator bar means to said doll arm, to move said arm when said bar means moves relative to said torso; and
means for selectively coupling and uncoupling said bar means with said torso.
2. The doll described in claim 1 wherein:
said means for coupling and uncoupling said bar means
with said torso includes means for uncoupling and
coupling said frame with said torso when said bar
means is coupled and uncoupled, respectively, with
said torso.
3. The doll described in claim 1 wherein:
said means for coupling said bar means to said doll
arm comprises shaft means pivotally mounted on said
torso and coupled to said arm to pivot said arm when
said shaft means pivots, and a pin mounted on said
shaft means; and
said bar means includes walls defining a slot engaged
with said pin and extending at an angle with the direc-
tion of movement of said bar means.
4. The doll described in claim 1 wherein:
said means for moving said bar means is constructed
to move said bar means laterally toward either side
of said torso;
said bar means includes walls defining an aperture; and
said means for coupling and uncoupling said bar means
with said torso comprises a member having lug
means, said member slideably mounted to move sub-
stantially forward and backward with respect to the
front and back of said torso to engage and disengage
said lug means with said walls of said aperture.
5. In a walking doll with a torso, legs, arm and head
appendages, which includes a mechanism mounted on the
legs and having a member driven to sway the doll's torso
from side to side, the improvement comprising:
means for coupling said member to a first of said
appendages to move it.
6. The improvement described in claim 5 wherein:
said means for coupling comprises first means for
selectively coupling and uncoupling said member
with said torso, and second means for coupling said
member to said first appendage to move it when said
member moves relative to said torso.
7. The improvement described in claim 6 wherein:
said first appendage includes an arm, a shaft pivotally
coupling said arm to said torso, and a pin on said
shaft; and
said second means comprises walls defining a slot in
said member, which is engaged with said pin on
said shaft.

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Disclaimer


Hereby enters this disclaimer to claim 5 of said patent.

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