

March 17, 1970

P. D. BART
TUMBLING DOLL

3,500,577

Filed Sept. 26, 1968

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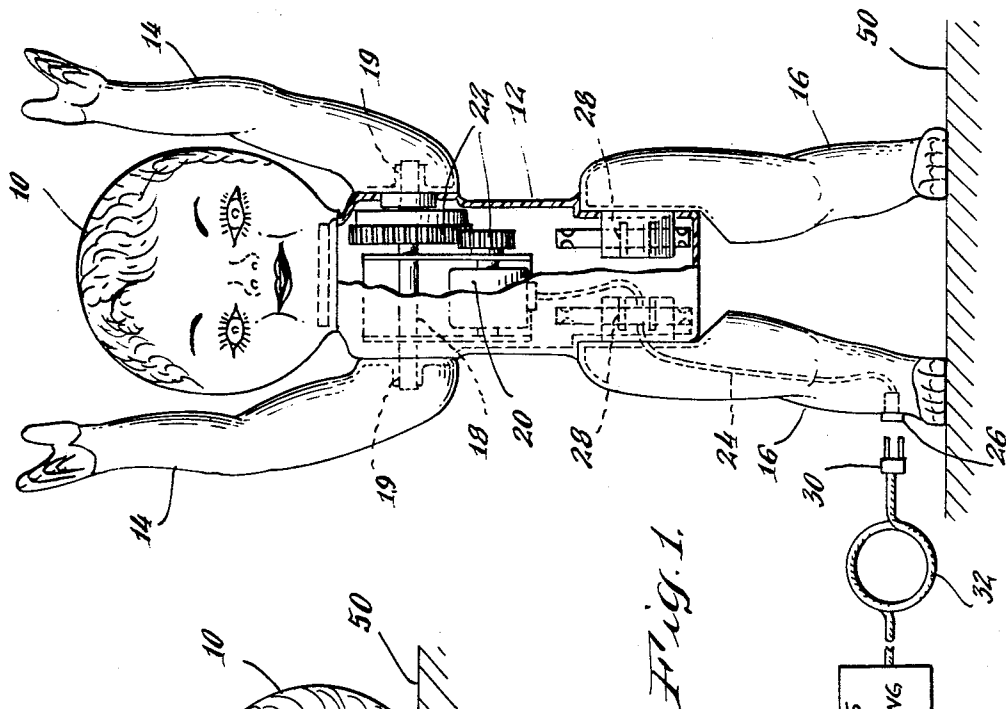


Fig. 1.

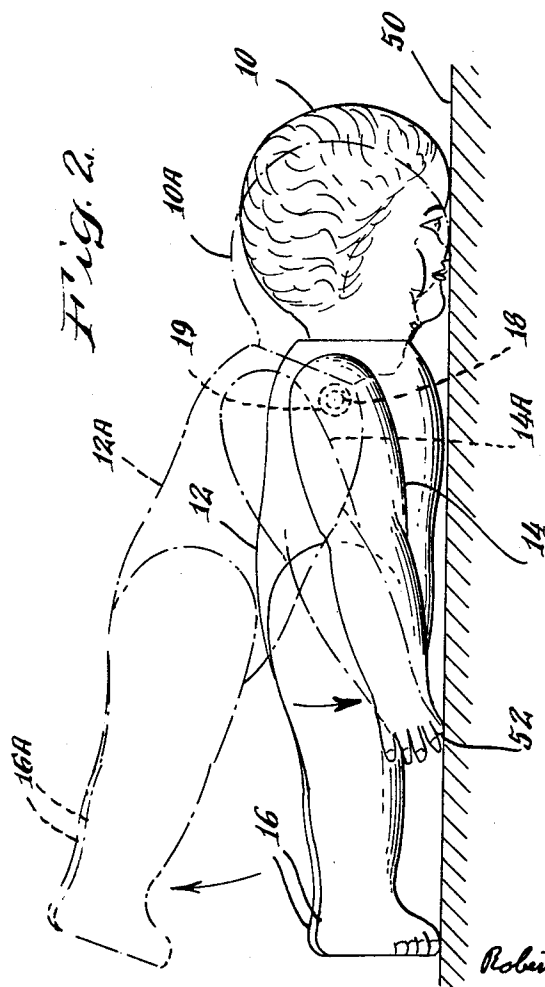


Fig. 2.

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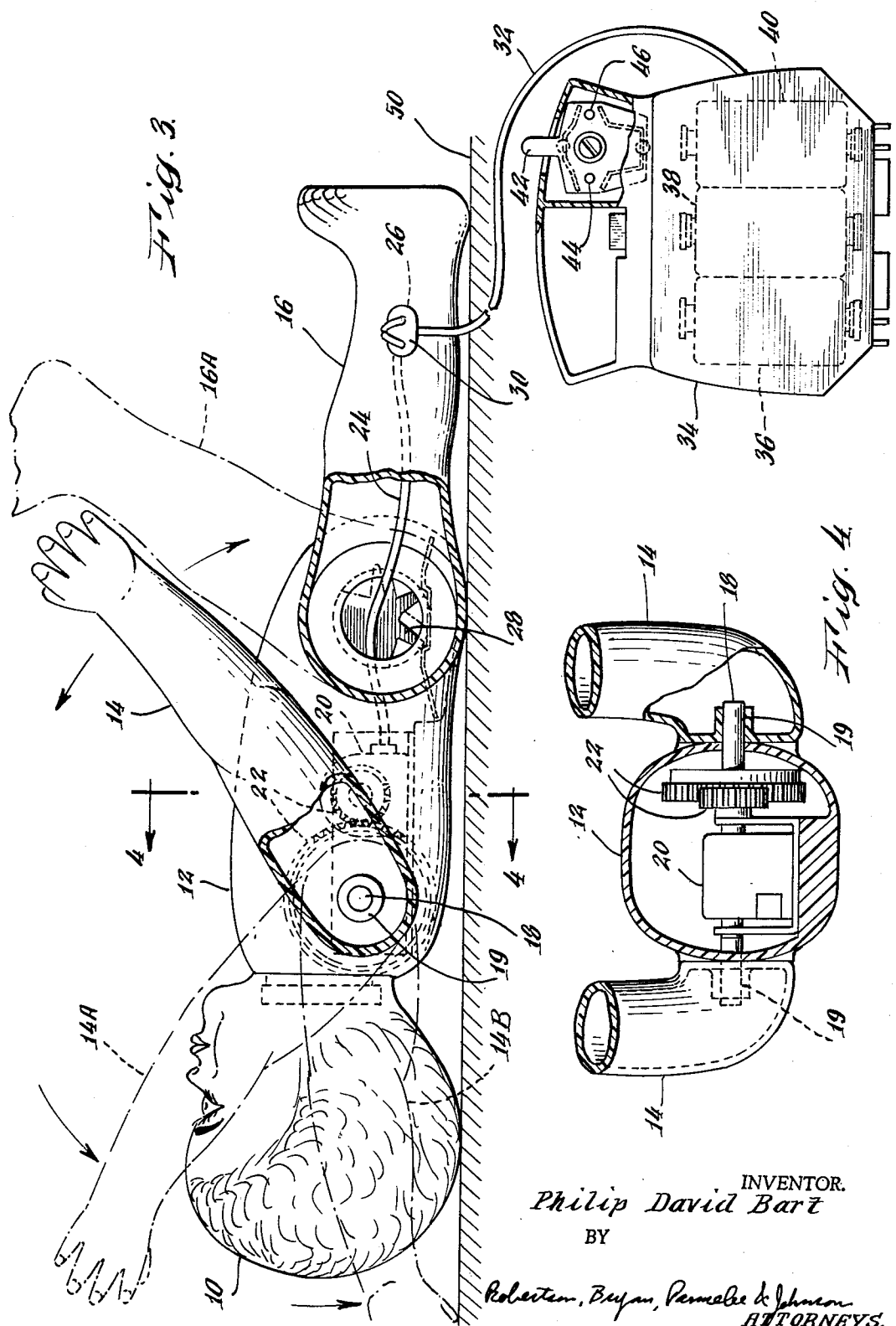
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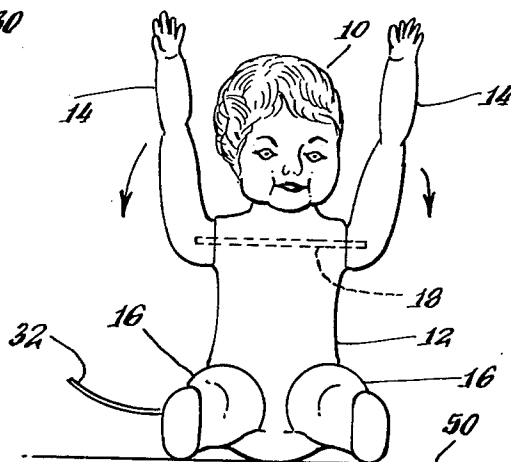
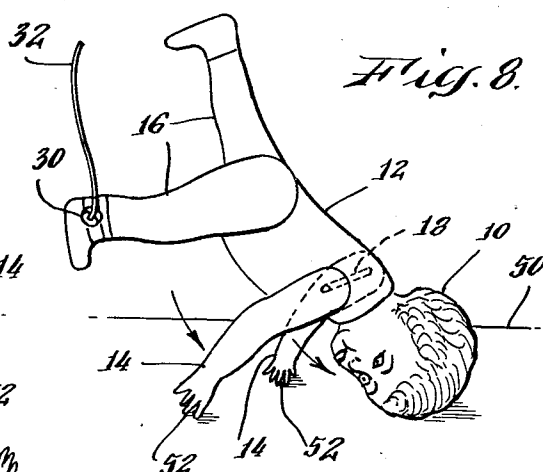
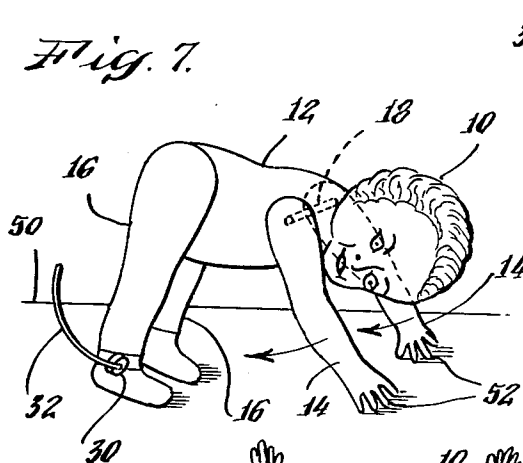
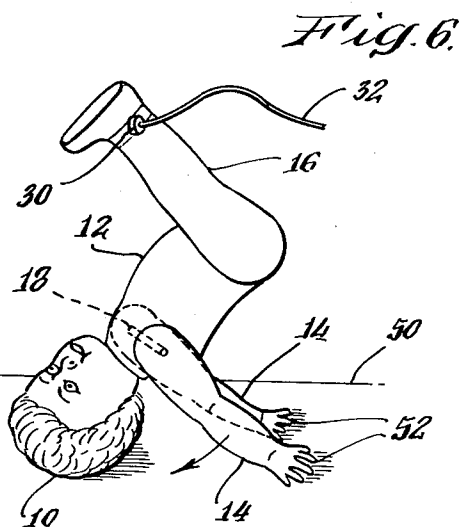
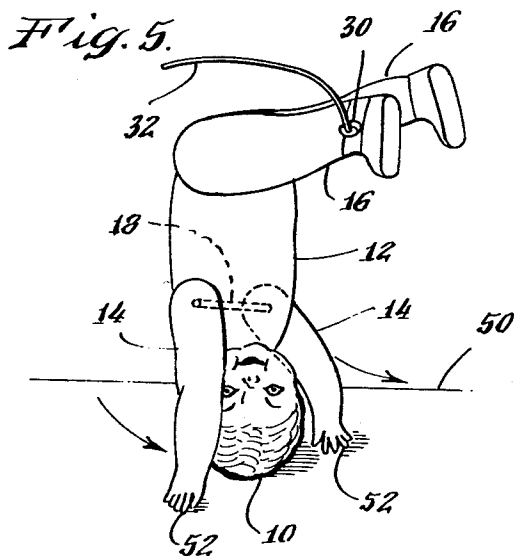
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3 Sheets-Sheet 3



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3,500,577

TUMBLING DOLL

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U.S. Cl. 46—134

10 Claims

ABSTRACT OF THE DISCLOSURE

A doll is provided which can do somersaults, backflips, handstands, and other acrobatic maneuvers. These acrobatics are the result of the continuous, simultaneous, rotational movement of the doll's arms which, when they come in contact with the floor, give the body of the doll a tumbling momentum. The direction of rotation of the arms may be reversed or stopped completely, thereby either changing the type of acrobatics performed or stopping the doll in some desired acrobatic position. The movement of the doll's arms is caused by a reversible, remotely controlled but self-contained electric motor.

Background of the invention

There have been many dolls made which have been powered by a self-contained motor and operated by remote control devices. However, in all of these prior instances the object has been to cause a member to move so as to simulate the more normal every day life functions of a child, such as walking, crawling, crying, and so forth. Likewise, many toys have been made which simulate the normal every day actions of an animal, such as a dog walking or wagging its tail, or a tiger stalking its prey. The invention which is the subject of this application, however, has for its object not the normal every day life functions of a small child but the realistic play-time actions of an exuberant child, such as tumbling, somersaulting, backflipping and a host of other various acrobatic maneuvers which one would expect from a small child at play.

The desirable features for a doll of this type are economy, simplicity, lightness, reasonable strength, resistance to breakage and ease of operation. While there are many dolls and toys in existence which incorporate these features almost all of these too have been aimed at reproducing a particular normal life function of a human child, such as blinking, crying, toddling, crawling, and so forth. This invention is an improvement over the foregoing dolls inasmuch as it produces a doll which realistically performs the playful movements and gyrations of a small child in an extremely lifelike manner, so as to provide a child with an almost lifelike companion which sits up, stands on its head, can do a front flip, a handstand, a backflip, and many other acrobatic tricks. These activities cannot readily be done with a toy which merely duplicates the normal lifelike functions of a small child and hence the doll provided by this invention represents a significant step forward in the doll and toy art.

Summary of the invention

My invention consists of a doll which can be made to perform various lifelike tumbling maneuvers, such as somersaulting, flipping, standing on its head, and so on, and which movements on the part of the doll can be controlled remotely by a child operating the doll at a point several feet removed from the doll.

The desired movement of the doll results from the rotation together of both of the doll's arms by virtue of a small D-C electric motor located in the chest cavity of

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the doll's body, which motor drives a shaft, each end of which is firmly attached to one of the doll's arms. When the motor is turned on, it rotates the shaft and causes the arms of the doll to rotate together in complete circles, the plane of which is perpendicular to a common axis running horizontally from one shoulder of the doll to the other. When the doll is placed on a firm surface such as a floor, this circular movement of the arms is impeded by that floor and, in trying to continue their circular movement, the arms push against the floor creating an equal and opposite reactive force which is exerted on the doll's body, causing the body to move upward until that force is dissipated, and which time the body falls back down as a result of gravity. As this cycle is repeated, the natural effect is a series of lifelike tumbling and somersaulting motions.

The motor in the doll's body is reversible, and therefore the arms of the doll may be rotated in either direction. It should be apparent that this ability to reverse the direction of the rotation of the arms of the doll is important in that it enables the child to control the movements of the doll and causes it to do a great variety of acrobatic maneuvers which it could not do if the doll's arms could only move in one direction.

The motor is powered by three dry cell flashlight batteries which are located in a remote handheld control unit. This handheld control unit contains a reversing switch so the child operating the doll may run the motor in either direction. This same switch is also used to turn the motor on and off.

The energy from the electric motor is transmitted to the shaft not directly but through a series of reduction gears which results in a reduction of the rotational speed so that the shaft will not turn too fast and a corresponding increase in torque to supply the power required to lift the doll. This gear train forms an important element of the invention because when the motor is turned off the gear train acts as a lock or break and the arms may be held in a fixed position thereby supporting the doll and holding it in a desired position, such as a headstand.

The legs of the doll are separately and manually movable and each may be locked in any of three positions by means of a detent hinge or the like. Each leg may be positioned as it would be if a doll were standing, or as it would be if the doll was in a sitting position, or it may be locked in a third position roughly halfway between a standing and a sitting position. As the position of the legs are varied, the center of gravity of the doll is altered and it is apparent that the tumbling characteristic will also be changed. Since the child who is playing with the doll can control the rotation of the arms as well as the position of each of the legs, he or she has a great deal of control and influence over the acrobatic gyrations which may be performed by the doll.

Brief description of the drawings

FIG. 1 is a frontal elevational view of the doll showing in a general way all the major components of the doll in order that the reader may grasp at the outset the overall function of the invention and how each of the major components functions in relation to the others.

FIG. 2 is an external perspective showing the doll in a horizontal position face down on the floor including a superimposed sketch in dotted lines of the doll in a raised position at a point when the body has been lifted off the floor to demonstrate the result of the pushing of the arms against the floor.

FIG. 3 is a side view of the doll with partial cutaways showing how the arms and legs are attached to the body

and an elevation view of the remote control unit and the switching means located thereon.

FIG. 4 is a cross sectional view of the doll's body taken on line 4—4 of FIGURE 3 showing the placement of the electric motor within the doll's body, the reduction gearing and the shaft which is driven by the motor as well as the manner in which the shaft is connected to the doll's arms.

FIGS. 5, 6, 7 and 8 are external perspective views of the doll in various stages of tumbling as the arms are rotated and when each of the legs have been locked in one of the three available positions.

FIG. 9 is an external frontal perspective view of the doll in a seated position.

Detailed description of the preferred embodiment

FIG. 1 is a front elevational view of the doll and gives a good overall view of the major components and how they interact to result in the acrobatic maneuvers fomed by the doll. Doll D consists of head 10, body 12, movable legs 16, and movable arms 14. In addition to doll D, the overall apparatus also includes a remote control unit 34 which contains reversible switching means and dry cell flashlight batteries (not shown in this figure) and which is connected to the doll by means of a light, flexible external connector cord 32 which terminates in connector plug 30 adapted to mate with an electrical connector receptacle 26 provided in the ankle of one of the doll's legs 16. Receptacle 26 can be seen to be the termination of another light, flexible connector cord which will be referred to as the internal connector cord 24 and which runs from the receptacle 26 up through the hollow leg 16 into the bottom of hollow body 12 and up to a small electric motor 20. Of course both the internal and external connector cords 24 and 32 consist of a pair of inexpensive conductors although this is not shown in any of the figures.

The motor 20 is in approximately the mid-point of the hollowed out cavity which makes up the doll's body 12, and is best described as a small direct current motor of the permanent field type which is commonly used in toys today. This motor is operatively connected to rotatable shaft 18 through an intermediate series of reduction gears 22 the purpose of which is to reduce the speed of rotation of the motor while at the same time to obtain a corresponding increase in torque. These effects produced by the reduction gears 22 represent an important contribution to the proper functioning of the doll and their significance will be discussed below. Shaft 18 runs horizontally through the upper portion of the body and it can be seen that each end 19 of the shaft extends beyond the body and into the upper or shoulder portion of one of the arms 14 and is tightly bonded thereto. Obviously then, as shaft 18 is rotated, arms 14 will also be rotated in the same direction, and at the same speed relative to the shaft 18 and relative to each other.

To set the doll in motion, the switching means contained in the remote control unit 34 is placed in one of its "on" positions and current is thereby sent from the dry cell flashlight batteries contained in that unit through external connector cord 32 in through plug 30 and receptacle 26 up through internal connector wire 24 and into motor 20. This causes the armature within the motor to turn which drives the gears in the gear train 22 which in turn cause shaft 18 to rotate. These gears reduce the sped of rotation of the armature of the motor 20 and therefore allow shaft 18 to turn at a slower speed and to turn with more torque so that arms 14 to which each end of the shaft is connected will not rotate too fast. If the arms turned as fast as the armature, the resulting motion of the doll would not be realistic and the lifelike feature of the doll would not be attained. The increase in torque provides the arms with sufficient power to raise the doll's body off the floor and place it into the various tumbling attitudes. It can be seen that as

shaft 18 rotates arms 14 also will rotate at exactly the same speed and will make simultaneous, similar circles in planes which are perpendicular to the axis represented by shaft 18 and parallel to the longitudinal axis of the doll which would run from the top of head 10 down through the floor. In FIGURE 1, if we assume for a moment that the doll is in a standing position it should be clear that no tumbling would result and that the doll's arms would simply continue to revolve in circles since the necessary relationship to an immovable surface would be lacking. It should be noted at this point that arms 14 may also be reversed and be rotated in the opposite direction. This is done by the switch on the remote control unit 34 which has two "on" positions by virtue of which, the direction of the current flow to the permanent field magnet motor can be reversed. This reversal of current flow will cause the armature of the motor to turn in the opposite direction. This reversing ability is an important feature of the doll inasmuch as it gives the child operating the doll maximum control over the acrobatic and tumbling maneuvers which the doll can perform. FIGURE 1 also displays the detent means 28 at the joints of each of the legs where they come in contact with body 12. These detent means allow each leg to be separately and independently moved and each leg can be placed in any one of three positions; a standing position as is shown in FIGURE 1, a sitting position and a position midway between these two positions. As will be discussed below, this is another feature which enables the child operating the doll to exert a great deal of influence over the maneuvers performed, inasmuch as a change in the position of one or both of the legs changes the center of gravity of the doll as well as altering the relationship of the doll's members to the floor which will directly influence the tumbling characteristics of the doll.

FIGURE 2 consists of two external views of the doll. The external view of the doll in solid lines depicts the doll lying face down on floor 50 with the arms 14 rotating in a counterclockwise direction. The figure of the doll represented by the dotted lines is intended to show the new position of the doll as a result of the arms 14 trying to rotate in a counterclockwise direction, as indicated by the arrow, but being prevented from doing so by floor 50. The result of that operation is the creation of a reactive force equal and opposite to the force of the arms 14 pushing against the floor 50. This force is exerted on the body 12 of the doll and it can be seen that the body 12A and legs 16A are lifted into the air as the head 10A slides along the floor 50 towards the point where the fingers have come in contact with the floor. From this figure it is clear that it is the interaction which takes place between the rotational movement of the arms and an immovable surface, such as the floor, that causes the doll to be launched into its tumbling gyrations. But this interaction alone would not be sufficient to accomplish the desired result and it is important to note that the ability of the operator to reverse the direction of the arms is important to achieve the full series of desired acrobatics. Considering doll D to be lying face down on floor 50, as outlined by the doll drawn in solid lines in FIGURE 2, if arms 14 were rotated in the opposite direction to that shown by the arrow, that is, clockwise as one looks at FIGURE 2, the rotation of the arms would still be impeded by floor 50 and doll D with its body 12, legs 16, and head 10 would be raised off the floor as before. But in this case, the doll would only be lifted enough to allow arms 14 to complete their circular movement at which time the doll would fall back to the floor. As the arms continue to rotate, this cycle would be continued and the doll would merely butterfly across the floor without performing anything in the way of a lifelike tumbling action. However, it is to be remembered that by virtue of the reversing switch on the remote control unit, the child

may reverse the direction of rotation of the arms 14 and cause them to move in the opposite, or counterclockwise, direction as indicated by arrow in FIGURE 2, and in this case the doll will function as described above with the resulting tumbling maneuver because now arms 14 are striking the floor at a point on the other side of the center of gravity of the doll, that is, at a point between the center of gravity of the doll and the feet of the doll, the center of gravity being located at approximately the midpoint of the doll's body 12. When this is the case, doll's body 12 is not merely raised off the floor enough to allow arms 14 to complete their rotational movement only to flop down again, but is actually thrown upwards and caused to rotate around the arm instead of the arm around the body. It is to be understood that when the reactive force giving the doll's body the upward momentum has been dissipated, the body, of course, by virtue of gravity, will tend to fall towards the floor, but at this point, arms 14 are again coming in contact with floor 50 and the cycle may be repeated, resulting in the lifelike tumbling and acrobatic maneuvers described herein.

FIGURE 3 is a side elevation of the doll D lying in a prone position on its back on the floor 50, and an elevational view of remote control unit 34 showing the positioning of dry cell flashlight batteries 36, 38 and 40, as well as the reversing switch 42 by which the child can reverse the rotation of arms 14. In this figure, we see the doll's head 10, one of the doll's arms 14, one of the doll's legs 16, and the doll's body 12. Arms 14A and 14B drawn in dotted lines, are designed to indicate to the reader the motion of the arm in a counterclockwise position. Leg 16A, drawn in dotted lines, is to indicate one of the alternate positions in which legs 16 can be independently placed. At approximately the midpoint of the doll's body 12, is a general outline of motor 20 situated just below the shaft which connects the arms to the body, but which is not visible in this figure. Arm 14 is connected to the end 19 of the shaft and may be thought of as the axis point about which arm 14 rotates. Internal connector cord 24 runs from motor 20 down through body 12 and in through the hollowed out portion of leg 16, and down to electrical connector receptacle 26 located at approximately the doll's ankle. Leg 16 can be moved into the position represented by leg 16A, as well as into a position roughly between these two, and may be locked in any one of these positions by means of detent means 28. Of course, the other leg has the same mobility and functions the same way. Remote control unit 34 consists of a battery case which is adapted to hold three dry cell flashlight batteries 36, 38 and 40, a reversing switch 42, two electric contacts 44 and 46, and external connecting cord 32 running from the control unit 34 and terminating in electrical connector plug 30 which is adapted to mate with receptacle 26 to complete the circuit and to supply power to motor 20. This plug and receptacle device, of course, are for the convenience of the child operating the doll, so that in the event the child wishes to play with the doll without utilizing its acrobatic maneuvers, it will be an easy matter to disconnect the control unit, thereby allowing greater ease in handling the doll.

Switch 42 has three positions. The middle position or neutral position which is shown in FIGURE 3, is the "off" position, as it can be seen that the switch is not making contact with either contact pin 44 or contact pin 46. The second position into which the switch may be placed is to put it in contact with contact pin 44. This will complete the circuit between the batteries and the motor thereby causing the shaft and, of course, the arms to rotate in one direction. However, as described above, it is essential that the child, in order to have maximum control over the acrobatic maneuvers of the doll, be able to reverse the direction of rotation of the arms and this is accomplished by the third possible position of switch

42, where the switch makes contact with contact pin 46 instead of pin 44. This also causes the circuit to be completed, but changes the direction of current flow from remote control unit 34 to permanent magnet field motor 20, thereby reversing the direction in which the armature of the motor turns. The result of this is to also reverse the direction of the shaft and, therefore, of the movable arms. Control unit 34 is made, preferably, of a light durable material, such as ordinary plastic currently used in toys today, and is designed to look like a purse to enhance its appearance in the eyes of the child user.

To operate the doll, the child places switch 42 in either of the "on" positions, thereby turning on motor 20 and causing the shaft and the arms to rotate. In FIGURE 3, the rotation is in the counterclockwise direction and this is demonstrated by arms 14A and 14B, drawn in dotted lines. As can be seen, the arm, when it gets to floor 50, cannot continue to rotate, and this causes a reactive force to be created which is exerted on the rest of the doll, the body 12, the head 10, and the legs 16. It is to be understood, and it should be clear from the description of the previous figures, that the other arm, not shown in this figure, is operating in exactly the same way in exactly the same direction, at the same time and at the same speed as the arm shown, inasmuch as both are attached firmly to each end of the shaft. Leg 16 can be manually moved into two positions other than the one shown. One of these positions is roughly a sitting position which is shown by a dotted line in FIGURE 16A. The third position is roughly midway between the two positions shown in FIGURE 3, although it is not shown in FIGURE 3. The movement of leg 16 is made possible by detent means 28 which allow a movement of the leg in approximately a 90° arc and enables one to lock the leg in any of the three aforementioned positions. It is to be understood that the movement of the legs is not the result of the electric motor 20, but the legs are movable manually and independently of one another.

FIGURE 4 is a cross-sectional view of the doll's body taken on line 4-4 of FIGURE 3, and, therefore, from a point immediately beneath the motor 20. This figure is designed to illustrate more clearly the relative positioning of motor 20 and the manner in which the shaft 18 is connected to movable arms 14. As can be clearly seen, the motor is self contained, being located within the hollow interior of body 12 at a point directly beneath shaft 18 and approximately in the middle of the doll's body 12. It is connected to shaft 18 not directly, but through an intermediate series of gears 22. It can be seen that each arm 18 is bonded tightly to the end 19 of shaft 18 so that as the shaft rotates, so will the arms. Of course, it can also be seen that this shaft also serves as the means by which the arms are attached to the doll's body. This figure demonstrates more clearly the series of reduction gears 22, the function of which is twofold. First, the gears reduce the rotational speed of shaft 18 so that it does not turn as fast as the armature of the motor. If shaft 18 turned as rapidly as the armature of the motor, arms 14 would rotate just as rapidly and the result would be a series of violent gyrations which would not be lifelike nor consistent with those of a small child at play. To recreate and simulate the lifelike playtime acrobatics of a small child, it is necessary that the arms rotate at a much slower speed than the armature of the electric motor and hence the placement of the gearing between the motor and the shaft. Another function of this series of gear 22 is to act as a braking device so that when the motor 20 is turned off arms 14 are immediately stopped in a particular position and locked in that position. This enables the doll to assume a position such as a headstand and remain in that position until such time as the motor is once again turned on. It can therefore be seen that this breaking of locking effect of the gear train is most helpful in contributing towards the lifelike attributes of the doll's performance.

FIGURE 5 shows the results of the motion of the doll's

arms when the doll is placed in close proximity to an immovable surface such as the floor. Of course, it can be seen that without this relationship to an immovable object, activation of the motor would simply result in the rotation of the arms 14 with no concurrent or resultant motion of the doll's body or of any other member of the doll. It is to be remembered that the tumbling action of the entire doll is the result of the reactive force exerted on the doll's body 12 as a result of the arms 14 pushing against an immovable surface such as the floor 50 thereby causing the doll to flip upwards and then as the arm completes its arc to fall back down and thereby creating a tumbling and somersaulting effect. When the movable arms 14 which are being turned by shaft 18 simultaneously come in contact with floor 50 the resultant pushing force causes the head 10 and body 12 to pivot around the arm 14 rather than the arm around the body. FIGURE 5 shows the doll in a typical tumbling position resulting from the counterclockwise movement of the arms 14 when the legs 16 have been locked in a sitting position, that is, roughly at a 90° angle with body 12 of the doll. The figure also shows external connecting cable 32 coming from the remote control unit and the plug connector 30 inserted in the receptacle in the lower portion of the leg 16. It should be apparent that if legs 16 are straightened so that the doll assumes a standing position somewhat different tumbling characteristics would result because of the change in the center of gravity of the doll relative to the point at which the arms are pushing against floor 50 and also because of the different physical relationship between the doll's members and the floor as the doll falls after the pushing force exerted by the arms on the floor has been dissipated.

FIGURE 6 shows the same elements as does FIGURE 5 except that in this figure the doll's arms are being rotated in the reverse or clockwise position and it can be seen that as they come in contact with the floor 50 this will cause the doll's body 12 to pivot in the opposite or counterclockwise direction thereby causing the doll to do something in the nature of a backflip, landing on its feet.

FIGURE 7 shows the same elements as FIGURES 5 and 6 but once again arms 14 are now moving in a clockwise position and as they push against the floor 50, body 12, legs 16 and head 10, will be pushed into the air in a generally clockwise position, thereby resulting in a somersaultlike motion of the doll.

In FIGURE 8, we show the same elements as in the previous figures but one change has been made and that is that one of the legs 16 has been placed in a straight or standing position while the other leg 16 has been left locked in the sitting position. This figure thereby shows again that the legs are separately and independently movable and that different positioning of the legs will change the tumbling characteristics of the doll. In FIGURE 8 the altered positioning of the leg 16 will cause a slight change in the doll's center of gravity and this will result in a slightly different tumbling characteristic of the doll, thereby once again demonstrating the amount of control which the child has over the type of acrobatic maneuvers performed by the doll.

FIGURE 9 is a frontal view of the doll in a sitting position on floor 50. This figure demonstrates once again the manner in which shaft 18 is attached to the arms 14 and it can be seen by virtue of the arrows that as the shaft turns in either direction the arms will follow. When the doll is seated on the floor such as in this figure, the arms, because of their length, will be unable to complete their circular motion when they come in contact with floor 50, and once again the reactive force will be created and exerted on the doll's body, thereby overcoming the forces of gravity and pushing the doll up into the air in some tumbling motion.

FIGURES 5, 6, 7, 8 and 9 are designed, of course, to show the doll in various attitudes into which it is placed

during the course of some of its tumbling motions. However, it is well to remember at this point that when the motor is stopped because of the breaking effect of the series of gears placed between the shaft 18 and motor 20 and because of the rigid stiff construction of arms 14, the doll may be stopped in all of these positions until the motor is once again turned on.

It should also be mentioned in relation to FIGURES 5, 6, 7, 8 and 9, that the fingers 52 at the end of each arm 14 are spread and are pointed in order to facilitate the interaction between the floor or floor covering, thereby assuring positive traction between the two.

What is claimed is:

1. A doll capable of performing tumbling acts while remotely controlled, said doll including a body, a head, arms, and legs secured to said body, said arms being interconnected and pivotally mounted for rotation about a common axis passing through the shoulders on said body for simultaneous movement of the outer ends of said arms about 360° circles in the same direction at the same time, a reversible electric motor positioned in said body and operatively associated with said arms to rotate the outer ends of said arms simultaneously in said circles relative to said body, said circles extending about said common axis, said arms being sufficiently long that when the doll is lying down on a supporting surface the rotating arms contact the surface on the opposite side of the center of gravity of the doll from said common axis, the center of gravity of the doll being located approximately at the midpoint of the doll's body, a reversing switch remote from said doll and electrically connected to said motor for rotating said arms in either direction, and locking means to inhibit the rotational movement of said arms while said motor is stopped for stopping the arms in any particular position, whereby said doll can be made to simulate the lifelike tumbling acrobatics of an exuberant child at play, including back flips, front flips and headstands, said head contacting said supporting surface and acting as a pivot during at least part of said acrobatics.

2. A doll as set forth in claim 1, wherein said arms move in planes substantially parallel to the longitudinal axis of said body.

3. A doll as set forth in claim 1, in which said legs are pivotally mounted on said body, said body including means for limiting the pivotal motion of said legs.

4. A doll as set forth in claim 1, in which said inhibiting means include a gear train between said motor and said shaft adapted to reduce the speed of rotation of said motor, thereby providing a more lifelike motion of said arms; to increase the torque of said motor, thereby providing the force required to lift the body of said doll; and to stop the rotation of said arms instantaneously when the motor is turned off, thereby enabling the operator to stop the doll in the midst of a tumbling maneuver.

5. A doll as set forth in claim 1, in which said rotatable arms are long enough to extend to a point between the center of gravity of said doll and the feet of said doll, whereby said arms may interact with an immovable surface at a point between the feet of said doll and the center of gravity of said doll to create a reactive force on the body of said doll to lift same from said surface.

6. A doll as described in claim 5, having legs which are independently and manually movable and thereby capable of altering the center of gravity of the doll to the extent that the tumbling characteristics of the doll will also be altered.

7. A doll as set forth in claim 1, having rotatable arms made of a rigid but light material to enable said arms to support the weight of said doll and having the fingers at the end of each of said arms spread, thereby increasing the traction when said arms come in contact with the floor.

8. A doll capable of performing tumbling acts while remotely controlled for simulating the acrobatic movements of a small child at play including a body, a head, rotatable

arms, and manually movable legs attached to said body, a rotatable shaft extending through the body at the shoulders, each end of which is firmly secured to one of said arms and which connects said arms to each other and rotationally mounts said arms on said body, said arms being positioned to rotate simultaneously together at the same time in the same direction in complete circles about the axis of said shaft, whereby said arms move rotationally relative to said body but cannot move relative to each other, said arms being sufficiently long that when the doll is lying down on a supporting surface the rotating arms strike the surface on the other side of the center of gravity of the doll from said axis, the center of gravity of the doll being located at approximately the midpoint of the doll's body, a reversible motor located within said body to rotate said shaft and therefore said arms, a remote source of current to activate said motor, remote reversing switching means to control said source of current, connecting means to route current from said remotely located source to said motor within said doll to stop and to reverse said motor, and said connecting means extending to one of the limbs of the doll, enabling the doll to perform acrobatic movements including front flips and back flips, said head contacting said supporting surface and acting as a pivot during at least part of said acrobatic movements.

9. A doll capable of performing tumbling acts while remotely controlled for simulating the lifelike acrobatics feats of a small child at play including tumbling maneuvers to sit up, do a headstand, push ups, a front flip, a backflip and stand on its head, including a body, a rotatable shaft passing through said body, a pair of limbs secured to said shaft at each end thereof and being rotationally mounted on said body by said shaft, whereby said limbs rotate in a complete circle, said limbs being positioned for simultaneous rotation in the same direction at the same time, a reversible electric motor located within the doll and operatively associated with said shaft to drive said shaft and, therefore, said limbs, said limbs be-

ing sufficiently long that when the doll is lying on the floor the rotating limbs strike the floor on the opposite side of the center of gravity of said doll from said shaft, the center of gravity of the doll being approximately in the middle of the doll's body, said doll including means inhibiting the rotational movement of said limbs when said motor is off, a handheld remote control unit including a battery case, a reversing switch, and a flexible connector cord connecting said control unit to one of the limbs of said doll, whereby the direction of current to said motor may be changed and said limbs caused to rotate in either direction to cause said doll to perform said acrobatic feats including tumbling maneuvers to sit up, do a handstand, push ups, a front flip, a back flip and stand on its head, said head contacting said floor and acting as a pivot during at least part of said tumbling maneuvers.

10. A tumbling doll as claimed in claim 8 in which said arms have hands which include fingers that are spread apart for increasing the traction where said fingers come in contact with the floor.

References Cited

UNITED STATES PATENTS

2,633,669	4/1953	Churus	46—247
2,656,646	10/1953	Wideman	46—134
3,269,056	8/1966	Hockman et al.	46—247
3,163,960	1/1965	Iwaya	46—247

FOREIGN PATENTS

220,516	4/1910	Germany.
712,870	1931	France.
562,874	1932	Germany.

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