

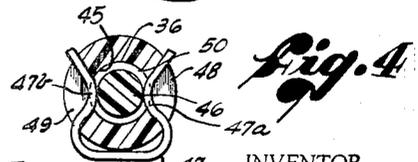
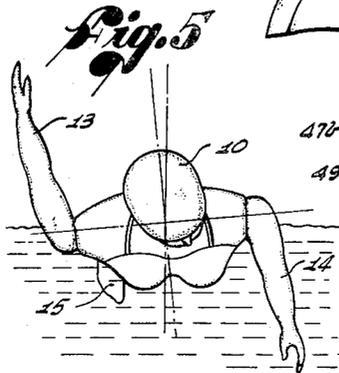
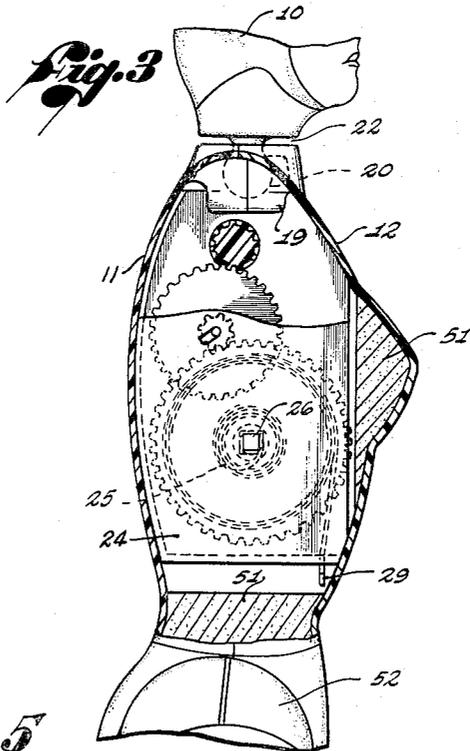
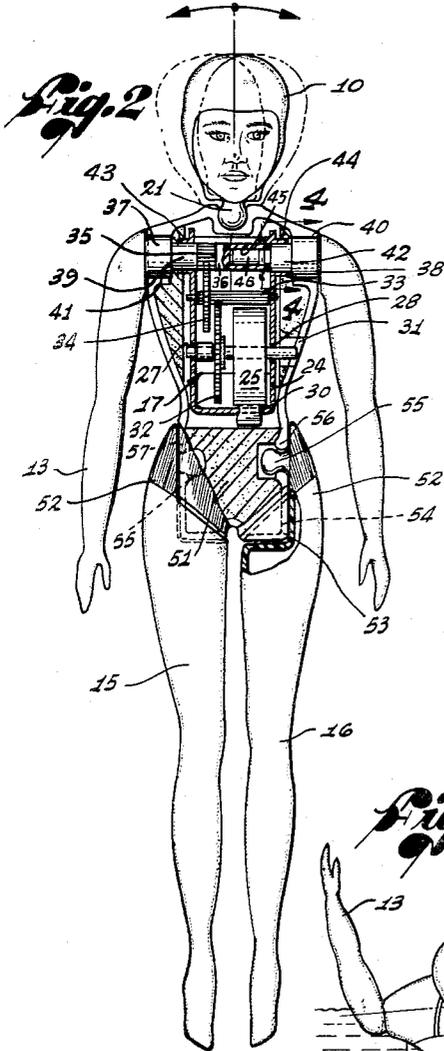
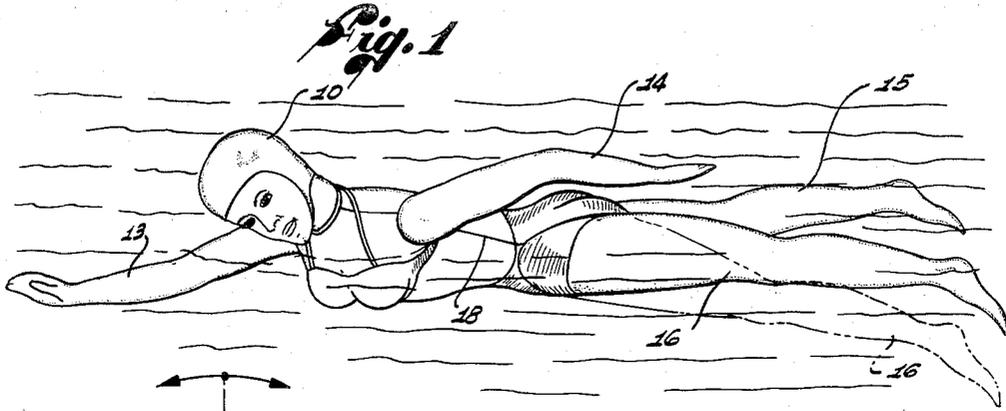
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F. R. PARKER

3,247,613

SWIMMING DOLL

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INVENTOR
FREDERICK R. PARKER
BY Zulwider Patton Reber
Lee and Utcht
ATTORNEYS

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3,247,613

SWIMMING DOLL

Frederick R. Parker, Long Beach, Calif., assignor of one-half to Johnny E. Johnson, Santa Fe Springs, Calif.
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The present invention relates to a toy and, more particularly, to an improved swimming doll.

It is a general object of my invention to provide an improved swimming doll that will closely simulate the action of the human body while swimming.

My invention has for a further object, the provision of a doll which may be used by children in the ordinary manner by virtue of the fact that its arms, legs and head are readily maneuverable but having the same parts adapted and arranged to allow the doll to function for swimming under the impetus of a motor means carried therein or thereon.

Another object of the invention is to provide a spring motor driven swimming doll, portions of whose figure can be adjusted to steer the doll in a straight line or on an arcuate course.

It is also an object of the invention to provide a swimming doll which very effectively simulates the natural movement of the arms, body and legs of a human swimmer in a variety of strokes.

The foregoing and other objects and advantages of the invention will become apparent from the following description of a presently preferred embodiment thereof, when taken in conjunction with the annexed drawing.

FIGURE 1 is a perspective view of a swimming doll incorporating my invention shown executing one of the variety of strokes of which it is capable.

FIGURE 2 is a front elevational view of the doll, portions being cut away to disclose interior details of construction.

FIGURE 3 is a partial side elevational view of the doll, portions being cut away to show other details of the interior construction.

FIGURE 4 is a sectional view on the line 4-4 of FIGURE 2, on an enlarged scale.

FIGURE 5 is a front end view of the doll portrayed doing a crawl stroke.

In general, the doll comprises a male or female toy figure whose body supports a movable head, a pair of movable arms and a pair of movable legs. Preferably, one leg is loosely hinged and the other leg is tightly hinged but still adjustable upwardly and downwardly relative to the long axis of the body. Adjustment of the tightly hinged leg effects swimming in a straight line or in a arcuate path. The arms can be positioned in angularly spaced apart relationship, as for example 180° apart, or can both be adjusted to the same position relative to the body. In the former case, the doll is adapted to simulate a crawl giving a reciprocal rolling action about the long axis of the body and legs. When the arms are placed in the same position relative to the body, the doll simulates a modified breast stroke. Additionally, the adjustment of the head of the doll will also affect the course the doll will take as well as the swimming style of the doll.

More specifically, the doll includes a head 10, a body made up of a back 11 and front 12, a pair of arms 13 and 14, and a pair of legs 15 and 16. All of these parts may be made of a suitable synthetic material such as polyvinyl chloride or polyethylene. Preferably, the doll is made with a suitable cavity located in the chest to receive a motor means, as for example, a clock spring motor 17, which is drivingly connected to the arms 13 and 14. Alternatively, the motor means could be incorporated in a

scuba simulating device which may be detachably connected to the back of the doll for engagement with suitable drive means contained in the body of the doll and connected to the arms.

In the presently preferred embodiment, the back 11 and front 12 of the body are complementary shells which are adhesively secured to one another along a parting line 18, best seen in FIGURE 1. The parts 11 and 12 have internal portions under the neck of the doll which together provide a boss 19 in which an upwardly opening generally spherical swivel seat 20 is formed. The head 10 on its lower end is integrally formed with a ball 21 that is swivelly received and retained by the seat 20 in a close fit whereby the head will remain in any adjusted position. A clearance space, indicated at 22, is provided between the underside of the head 10 and the body of the doll to provide space whereby the head may be moved up or down, or left or right, and the head may also be rotated about the longitudinal axis of the doll.

The motor 17 includes a generally box-like housing 24 of a shape adapted to be received within the chest and abdomen of the doll's body. In the illustrated embodiment of the invention, power for rotating the arms 13 and 14 is provided by a clock spring 25 wound about and having its inner end secured to a shaft 26 having opposite ends journaled in aligned bores 27 and 28 formed in opposite side walls of the housing 24. The outer end of the clock spring 25 is formed into a tab 29 that is anchored by insertion through a suitable perforation 30 formed in the floor of the housing 24. While the spring 25 may be wound up by reversely turning the arms of the doll, one end of the shaft 26 may be extended beyond the side wall of the housing 24 to be accessible through an opening 31 in the side of the doll's body and adapted to receive a key (not shown) by means of which the spring may be wound.

The gear train for transmitting the torque of the shaft 26 to the arms 13 and 14 is conventional and will not be described in detail. Suffice it to say that this gear train comprises a spur gear 32 keyed to the shaft 26 and meshing with a pinion 33 whose opposite ends are journaled in the opposite side walls of the housing 24. Fixed coaxially with the pinion 33 is a gear wheel 34 that drives a pinion 35 formed integrally on an output shaft portion 36 of the arm 13.

Both arms 13 and 14 are formed with integral hub portions 37 and 38, respectively, that are rotatably receivable within plain bearing sockets 39 and 40, respectively, integrally formed in the shoulder portions of the doll. Inwardly of the hub portions 37 and 38 of the doll arms, reduced diameter portions 41 and 42 of the arms 13 and 14, respectively, are journaled in sleeves 43 and 44 mounted on the opposite side walls of the housing 24. To interconnect the two arms for co-rotation, the output shaft 36, at its innermost end, is formed with a cylindrical cavity 45 adapted to receive a stub 46 formed integrally on the inner end of the arm 14. This stub 46 has a tight fit in the cavity 45 so that when the output shaft 36 is driven by the spring motor both arms rotate together. However, this fit is not so tight as to prevent rotation of the arm 14 relative to the arm 13 whereby both arms may occupy either the same position relative to the body of the doll, as shown in FIGURE 1, or angularly offset positions as illustrated in FIGURE 2, and FIGURE 5. In order to insure co-rotation and relative adjustability of the arms, a spring slip 47, of generally U-shaped configuration but having a pair of opposed inwardly bent portions 47a and 47b, can be snapped around the tubular end of the output shaft 36 with the inwardly bent portions receivable through a pair of diametrically opposite slots 48 and 49 in the wall of the tubular portion to gear against the bottom of a groove 50 that is formed circumferentially in the

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stub 46 of the arm 14. This connection will aid in keying the arms 13 and 14 together for co-rotation while also permitting angular adjustment of the arms and, also, serves to yieldably retain the arm 14 against axial displacement out of its connection with the arm 13.

If the material of which the doll is made is not sufficiently buoyant, a synthetic closed cell foam material 51 such as polyurethane or polystyrene may be used to fill those portions of the body cavity which are not occupied by the motor 16 and the internal arm structure.

The legs 15 and 16 are mirror images of one another, both being formed with hip simulating portions 52 having inwardly facing portions 53 whose configuration is a segment of a cylinder. The lower end of the body of the doll is formed with partially cylindrical portions 54 mating with the portions 53 of the legs. At the axis of the portions 53, the legs are both formed with inwardly projecting headed portions 55 adapted to be snapped into openings 56 and 57 formed on opposite sides of the doll at the axis of the portions 53 and 54. The opening 57, on the left hand side of the doll as viewed in FIGURE 2, has a tight fit with the stem of the portion 55 of the leg 15 whereby to retain the leg 15 in any adjusted position relative to the body of the doll. The opening 56 on the other side of the doll's body has a loose fit with the projection 55 of the other leg 16 whereby the leg 16 is freely swingable relative to the doll's body.

To make the doll swim, the clock spring 25 is first wound up. If a key is used, the arms of the doll may be held during the winding whereby the gear wheel 34 will be moved out of driving contact with the pinion 35 such displacement being permitted by position and direction of a slot that journals one end of the shaft for the pinion 33 and gear wheel 34. Alternatively, the key winding mechanism may be eliminated and a plain circular bearing provided for the shaft of the gear wheel 34 and the spring 25 is then wound by merely turning either of the arms 13 or 14 in a reverse direction, i.e., counterclockwise as viewed in FIGURE 1.

Assuming that the arm 14 has been adjusted 180° out of phase with the other arm 13, when the doll is released in the water its swimming action will simulate a crawl, as shown in FIGURE 1 and FIGURE 5, the arms alternately entering and leaving the water. As is shown in FIGURE 5, when the doll is doing a crawl stroke, it will roll to and fro about its length. Thus, as the left arm 14 enters the water the left shoulder of the doll is raised and the right shoulder enters more deeply into the water. As the right leg 15 is firmly held by its socket, it will rise and fall with the right hand side of the doll's body. If the right leg 15 has been adjusted to extend downwardly into the water, that side of the doll's body will present more drag to the progress of the doll in the water and accordingly the doll will veer to the right. If the leg 15 is adjusted upwardly to protrude out of the water, the right hand side of the doll affords less resistance than the left hand side of the doll and the doll accordingly will steer a course to the left.

The freely swingable left leg 16 buoyantly trails the swimming doll and the roll axis of the doll is generally along the length of the buoyantly trailing leg 16 and doll's body. As the doll rolls about this longitudinal axis, the gap between the legs 15 and 16 opens and closes much in the manner of a scissors kick of a human swimmer and aids the doll through the water, as indicated in FIGURE 1. Furthermore, the fact that the leg 16 buoyantly trails the body of the doll prevents its rolling in and out of the water with the rolling movement of the doll's body whereby the doll makes swifter progress through the water. The loosely pivoted leg 16 thus both increases the speed of the doll and gives directional stability, serving to dampen the tendency of the rolling body to alternately move to the left and right as one shoulder and then the other rises and falls in the water.

The doll may swim in a modified breast stroke when

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the arms are adjusted to the same relative positions, as shown in FIGURE 2. For the breast stroke, the head is preferably tilted upwardly out of the water and to the left or right in accordance with the course which it is desired to have the doll steer. Obviously, the doll's head may also be used to steer the doll along a desired course when the arms 13 and 14 are adjusted to a crawl stroke and the head may be used to either augment or counter the effect of the tightly hinged leg 15.

While I have described in considerable detail the presently preferred embodiment of my invention, it will be understood that modifications, within the scope of the appended claims, may be made without departing from the spirit of the invention.

I claim:

1. In a swimming doll the combination comprising: a body formed with a chest cavity;

a spring motor mounted within said chest cavity of said doll and having an output shaft disposed transversely of said body to span shoulder portions of said body;

a pair of arms drivably connected to opposite ends of said output shaft of said spring motor for co-rotation with said output shaft as said spring motor unwinds in a direction to move said doll forwardly through the water, said arms serving to wind said motor when said arms are reversely moved, means connecting at least one of said arms by a tight fit pivotal connection to said output shaft for adjustment to a position angularly offset from the other of said arms or to the same position as said other arm whereby said one arm enters the water at a different time or the same time, respectively, as said other arm when said doll is swimming;

a pair of legs connected to the lower end of said body, one of which legs is securely adjustably mounted in said body by a tight fit pivotal connection to be fixable in alignment with said body or in positions angularly related to said body in order to steer said doll to the left or to the right, the other of said legs being loosely pivotally connected to said body to trail said body when said doll is swimming to impart a reciprocal rolling of said doll generally about the length of said body and said other leg when said arms are arranged in angularly offset positions;

and a head mounted on top of said body in a firm ball and socket connection to be adjustably swivelled to a desired position relative to said body for affecting the source of travel of said doll in the water.

2. In a swimming doll, the combination comprising: a body; a drive means for said doll having an output shaft disposed transversely of said body to span shoulder portions of said body; a pair of arms drivably connected to opposite ends of said output shaft for co-rotation with said output shaft in a direction to move said doll forwardly through the water, means connecting at least one of said arms to said output shaft for adjustment to a position angularly offset from the other of said arms or to the same position as said other arm whereby said one arm enters the water at a different time or the same time, respectively, as said other arm when said doll is swimming; and a pair of legs connected to the lower end of said body, means adjustably securing one of the legs of said pair on said body to be fixable in alignment with said body or in positions angularly related to said body in order to steer said doll to the left or to the right, the other of said legs being loosely pivotally connected to said body to buoyantly trail said body when said doll is swimming and to impart a reciprocal rolling to said doll generally about the length of said body and said other leg when said arms are arranged in angularly offset positions.

3. In a swimming doll or human form, the combination comprising a body:

a pair of arms mounted on said body for rotation about axes disposed transversely to the longitudinal axis

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of said doll to simulate the path of swimming movement of natural arms;

drive means carried by said doll and drivingly interconnected to both of said arms for rotating said arms in a direction to propel said doll through the water;

5 means connecting at least one of said arms to said drive means whereby said one arm can be selectively fixed in a position angularly offset from the other of said arms or to the same position as said other arm relative to the body of said doll, whereby said arms enter the water at different or the same times when said doll is swimming; and

10 a leg loosely connected to the body of said doll at the hip of said doll to be freely swingable relative to said body, said leg being bouyant whereby said leg buoyantly trails the body of said doll when said doll is swimming and effects reciprocal rolling motion of said doll generally about the longitudinal axes of said body and said leg, when said arms are angularly offset from one another.

20 4. In a swimming doll of human form, the combination comprising a body:

a pair of arms mounted on said body for rotation about axes disposed transversely to the longitudinal axis of said doll to simulate the path of swimming movement of natural arms;

25 drive means carried by said doll and drivingly interconnected to both of said arms for rotating said arms in a direction to propel said doll through the water;

30 means connecting at least one of said arms to said drive means whereby said one arm can be selectively fixed in a position angularly offset from the other of said arms or to the same position as said other arm relative to the body of said doll, whereby said arms enter the water at different or the same times when said doll is swimming; and

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means adjustably securing a leg to the body of said doll at the hip of said doll to be fixed in and out of alignment with a longitudinal axis of the body of said doll whereby more or less of said leg can be immersed in the water to effect steering in a desired course when swimming.

5. In a swimming doll of human form, the combination comprising a body:

bouyant means for supporting said doll at the surface of the water;

a pair of arms rotatably mounted on the body of said doll at the shoulders of said body to simulate the paths of swimming movement of natural arms;

a drive means carried by said doll and drivingly interconnected to both of said arms to rotate said arms and effect swimming movement of said doll in the water;

a leg loosely connected to the body of said doll at the hip of said doll to be freely swingable relative to said body, said leg being bouyant whereby said leg buoyantly trails the body of said doll when said doll is swimming and effects a rolling motion of said doll generally about the longitudinal axes of said body and said leg; and

means adjustably securing another leg to the body of said doll at the hip of said doll to be fixed in and out of alignment with the longitudinal axis of the body of said doll whereby more or less of said other leg can be immersed in the water to effect steering of said doll in a desired course when swimming.

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RICHARD C. PINKHAM, *Primary Examiner.*