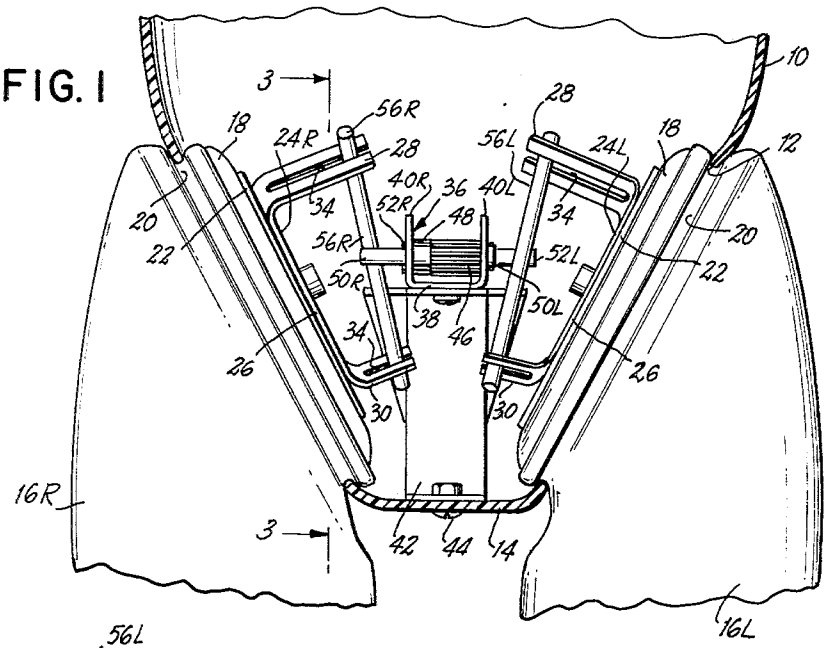
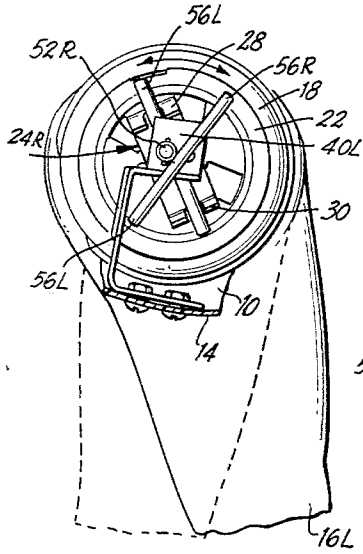
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WALKING MECHANISM FOR A DOLL

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FIG. 1





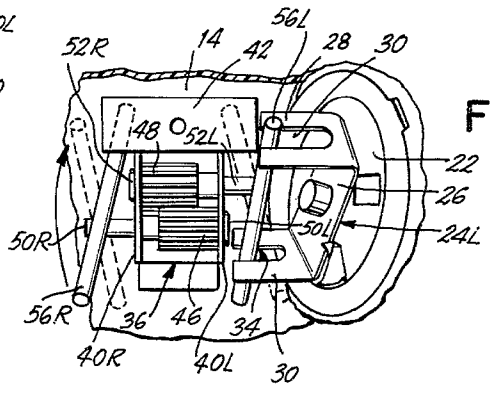


FIG. 2

FIG. 3

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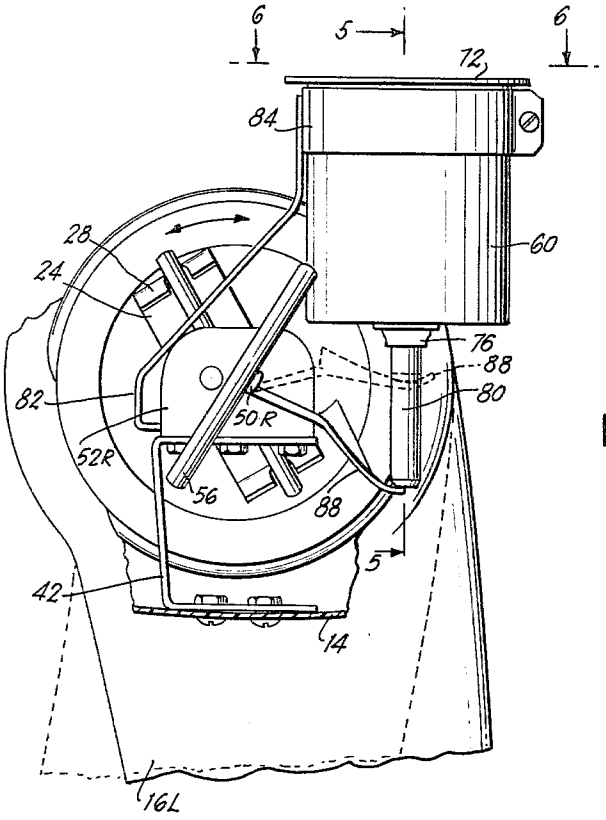


FIG. 4

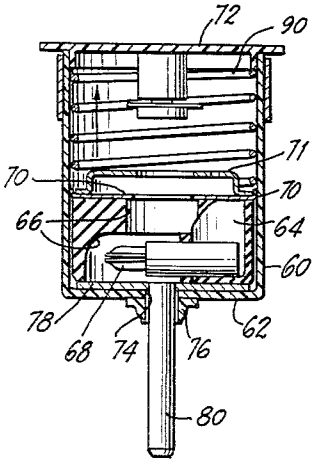


FIG. 5

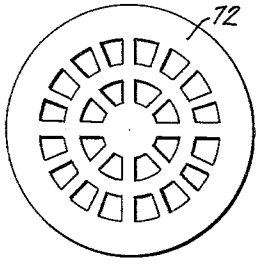


FIG. 6

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WALKING MECHANISM FOR A DOLL

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Filed June 27, 1961, Ser. No. 119,873
4 Claims. (Cl. 46—149)

The present invention relates to a doll or like figurine, and particularly to a walking and talking doll, and especially to a combined walking and talking mechanism for a doll, or the like.

Walking dolls of the type to which the present invention relates simulate a walking movement when the torso of the doll is moved forward, in substantially upright position while resting on a surface, alternately on each of its legs. Generally, the lagging behind of the leg on which the doll is resting and which, when the torso is moved forwardly, becomes disposed at a rearwardly extending angle to the vertical, either winds a mechanism which moves such leg in the opposite direction when the doll is rested on the other of the legs thereof; or, the two legs are interconnected by a mechanism within the torso that positively urges the free leg forwardly as the supporting leg is disposed rearwardly of the torso by the movement of the latter in a forward direction.

The present invention is directed to a walking mechanism for a doll or the like of the second of the two general types described above, and has for its object to provide a simplified and improved mechanism for effecting the disposition of the free leg at a forwardly directed angle to the torso as the supporting leg is gradually disposed at a rerawardly directed angle to the torso as the latter is moved in a forward direction.

It is thus one object of the present invention to provide a walking mechanism for a doll in which each of the legs is positively interengaged with the other for angular movement in a direction opposite to the other.

It is another object of the present invention to provide a doll walking mechanism of the character described in which, because of such positive interengagement of the two legs, such legs are moved in substantially equal paces to thereby simulate a more natural walking pace.

It is also an object of the present invention to provide a doll walking mechanism of the character described which is of highly simplified construction, having a minimum of parts that may be economically produced and easily and economically assembled and installed.

It is a further object of the present invention to provide a doll walking mechanism of the character described which is positive acting and sturdy and will require a minimum of attention for adjustment and repair.

The foregoing and other objects and advantages of the doll walking mechanism of the present invention will become more readily apparent to those skilled in the art from the embodiment thereof shown in the accompanying drawings, and from the description following. It is to be understood, however, that such embodiment is shown by way of illustration only, to make the principles and practices of the invention more readily comprehensible, and without any intent of limiting the invention to the specific details shown therein.

In the drawings:

FIG. 1 is a fragmentary, partly sectional and partly elevational view of the lower torso portion and upper leg portions of a doll having the walking mechanism of the present invention;

FIG. 2 is a fragmentary, top plan view of the leg-moving mechanism shown in FIG. 1;

FIG. 3 is a sectional view, on a reduced scale, taken on line 3—3 of FIG. 1;

FIG. 4 is a view similar to that of FIG. 3, showing, on an enlarged scale, the walking mechanism combined with a sound producing mechanism;

FIG. 5 is a section taken on line 5—5 of FIG. 4, with parts thereof shown in elevation; and

FIG. 6 is a view taken along line 6—6 of FIG. 4.

Referring now, in greater detail, to the embodiment of the invention illustrated in the accompanying drawings, the same shows a hollow torso 10 of a doll, which may be either rigid or semi-rigid, and of conventional construction, and is provided, at its lower portion, with circular leg openings 12, each lying in a plane that is downwardly convergent toward the other and are separated, at the bottom of the torso, by a crotch portion 14, all in the conventional manner.

The doll is also provided with a pair of legs 16R and 16L, preferably of the hollow type and having an upper end surface, that may be defined by an inwardly offset flange 18 and is set at an angle to the longitudinal axis of the leg; such surface sloping downwardly in the direction of the instep of the foot of the leg, as is conventional. The upper end portion of each of the legs 16R and 16L is of a diameter larger than a leg opening 12 and each of the legs is provided with a circular groove 20 adjacent and parallel to its upper end surface, whose bottom is of a circumference less than the circumference of a leg opening 12 so that the upper end portion of the leg may be force fitted through a leg opening 12 and the marginal edge portion of such leg opening engaged within such groove 20, whereby the leg may be rotatably retained in place in the conventional manner, as practiced in the walking doll art.

Each of the legs 16R and 16L preferably has secured across its end face, as to flange 18, in any desired manner, a preferably metallic plate 22 and has fixedly secured to such metallic plate a substantially U-shaped metallic brackets 24R and 24L, respectively. Each of the metallic brackets 24R and 24L comprises a web portion 26 which is preferably, though not necessarily, secured in vertical position on the plate 22 and a pair of spaced upper and lower arms 28 and 30, respectively, connected to the web 26, such arms extending substantially horizontally inwardly into the torso 10 when the legs are mounted in the opening 12. The bracket arms 28 and 30 may, if desired, be of different lengths, with the lower arm 30 being shorter than the upper arm 28. The arms 28 and 30 may preferably be of substantial width and may each be disposed with its width along a plane substantially at right angles to the longitudinal axis of the torso and parallel to the other of the arms. Each of the arms 28 and 30 of the brackets 24R and 24L is formed with a slot 34 extending from its outer edge inwardly thereinto.

Supported on the crotch 14 is a U-shaped bracket generally designated as 36, including a web portion 38 and a pair of spaced relatively wide parallel arms 40R and 40L, respectively. The bracket 36 is secured in its place with its web 38 extending transversely of the crotch 14 and its arms 40 extending upwardly each opposite one of the openings 12. To that end, bracket 36 may be secured by its web 38 to a supporting base 42 of any desired type, which may be secured on the crotch in any desired manner, as by rivets 44.

Rotatably supported between the upright arms 40R and 40L, in meshing relation, are a pair of preferably cylindrical pinions 46 and 48, each of which is provided with a shaft extension at each end, namely 50R and 52L on pinion 46 and 52R and 50L on pinion 48, respectively, at its opposed ends.

Pinion 46 is rotatably supported by its shaft extensions 50R and 52L in suitable bearing openings provided for the purpose in the bracket arms 40R and 40L and has its shaft extension 50R secured to a rod 56 intermediate the ends of the latter, in substantially normal relation

thereto; the end rods 56 engaging in slots 34 of the arms of the bracket 24R that is secured to the leg 16R.

Similarly, pinion 48 is rotatably supported by its shaft extensions 50R and 52L, respectively, in suitable bearing openings provided for the purpose in the bracket arms 40R and 40L and has its shaft extension 52L secured to a rod 56L intermediate the ends of the latter; the ends of rod 56L engaging in the slots 34 of the arms of the bracket 24L.

Preferably, the pinions 46 and 48 are disposed with their shaft extensions alined in the plane substantially normal to the longitudinal axis of the torso 10 and, for the purpose of efficiency, the shaft extension of the forward of the pinions 50R is secured to the rearwardly facing side of its associated rod 56R and shaft extension 52L of the pinion 48, the rearmost of the pinions, is secured by its shaft extensions 52L to the forwardly facing side of the rod 56L.

In assembling the walking mechanism of the present invention with a doll, brackets 24R and 24L are secured each to a plate 22 and the plates 22 each secured to the flange 18 of legs 16R and 16L, respectively. The plates 22 are preferably arranged in place so that the bracket 24R and 24L secured thereto has its web 26 disposed thereon in vertically extending position, or, in a plane parallel to the longitudinal axis of the leg. The bracket 36 is pre-assembled with pinions 46 and 48 and secured by its base 42 on the crotch 14 of the torso 10; the base, bracket arms, and the bearing openings in such bracket arms being preferably so formed that the shaft extensions of the pinions are disposed approximately opposite the center of the leg openings 12 of the torso. By this arrangement, when the legs 16R and 16L are pressed into their respective receiving openings 12, the ends of rods 56R and 56L will register with and be received into slots 34 in the arms of the brackets 24R and 24L, respectively; which slots may be formed off center of the arms 28, if necessary.

The operation of the doll walking mechanism of the present invention will be readily apparent from the foregoing description thereof. It will be clear that as the doll is rested, for instance, on its leg 16R, in slightly tilted position so that its other leg is clear of the supporting surface, and the torso then moved forward, the leg 16R will rotate in its opening 12 so that the upper arm 28, on its bracket 24R will move forward with the torso, whereas the lower bracket arm 30 will move rearwardly, with the leg. This will cause the rod 56R, which will be turned by the brackets 24R, to turn the forward pinions 46 in the same direction as the rod 56R. Pinion 46 will cause the rotation of pinion 48 in the opposed direction and the latter will correspondingly rotate rod 56L in the direction opposite to that of rod 56R and the latter cause leg 16L to rotate in the direction opposite to leg 16R, namely, in the direction forwardly of the torso. This procedure will be repeated in the reverse order when the doll is thereafter rested on leg 16L and the torso again moved forward.

FIGS. 4 to 6 illustrate the combination, in operative relation, of the walking mechanism described above with a sound producing mechanism.

The talking mechanism may be of any type heretofore conventionally used with dolls, or any other suitable type, such as were operated either by altering the position of the doll, as from upright to lying down, or manually, and which are capable of or suitable for modification for mechanical operation, as by the provisions of an operating element, such as a lever or plunger, that may be associated with the doll walking mechanism to be automatically moved thereby, or, more specifically with one or both of the pinions of the doll walking mechanism.

In the illustrated embodiment, the sound producing mechanism is of a generally conventionally form, consisting of a hollow cylinder 60 closed at its bottom by a wall 62 in which cylinder there is disposed a relatively closely fitting cylindrical block or weight 64, as of a ceramic material, which is provided with a passageway 66, extending in an axial direction therethrough, within which is supported a vibratory sound producing element, indicated at 68. The weight 64 is provided at its upper end with a washer 70 having a central opening and held in place by a similarly apertured metallic member 71. The washer 70, whose peripheral edge portion overhangs the sides of the weight 64, forms an airtight fit with the wall of the cylinder 60. The open top of the cylinder 60 is provided with a grate or grille 72 which retains the weight within the cylinder while permitting air to be displaced therefrom.

Sound is produced by the mechanism by first moving the weight 64 toward the top of the cylinder 60 and then releasing it for movement towards the bottom thereof. The close fit of the washer 70 within the cylinder, restricts the passage of air displaced by the weight 64 to the passage 66, in passing through which it sets the element 68 to vibrate.

In adapting such sound producing device for the purpose of the present invention, the bottom wall 62 of the cylinder is provided with a central opening 74 into which or around which is set a nipple 76 having an axial passageway in register with the opening 74. A plunger 78 is placed within the cylinder 60 below the weight 64 whose stem 80 extends through the nipple 76 and projects downwardly therefrom.

The cylinder is supported within the doll torso 10, preferably on the walking mechanism supporting base 42, by means of a bracket 82 extending upwardly from such base and having at its upper end a circular clamp 84 that fits about and supports the cylinder 60 with the stem 80 extending to a point slightly below the level of the pinions 46 and 48. One of the pinions, as 46, has secured thereto as to its shaft extension 50R, an arm 88 which is curved or has an extension thereof arranged to underlie the end of the stem 80, to be in close proximity to such stem and when the doll legs are in upright position, in axial alinement with the torso, and to engage the end of stem 80 to move it upwardly and inwardly into the cylinder 60 and raise the weight 64 upon the displacement of the leg 16R into angular position relative the torso axis, as forwardly. It will be apparent that when such leg 16R is thereafter moved into the opposite direction, pressure on the stem will be relieved and the weight 64 thereby allowed to drop within the cylinder, to produce a sound, in the manner described above. To ensure proper and certain operation of the sound producing mechanism, an expansion spring 90 may be interposed between the upper surface of the weight 64 and the inner surface of the grille 72 which will press the weight downwardly to insure displacement of air for sound production.

This completes the description of the construction, assembly and operation of the doll walking and talking mechanism of the present invention. It will be apparent that such mechanism is of highly simplified construction and mode of operation; that it may be easily and economically mounted and assembled with a doll and that it will simulate a natural walking movement with steps of full and normal-appearing length, and that such walking movements will be automatically accompanied by intermittent sound.

It will be further apparent that numerous modifications and variations in the doll walking mechanism of the present invention may be made by anyone skilled in the art, in accordance with the principles of the invention hereinabove set forth, and without the exercise of any inventive ingenuity. I desire, therefore, to be protected for any and all such modifications and variations that may be made within the spirit of the present invention and scope of the claims hereto appended.

What I claim is:

1. A walking mechanism for a doll, or the like, having a hollow torso portion, said torso portion having openings

formed therein in opposed sides thereof for rotatably supporting a pair of legs, said torso having a crotch portion spacing said openings, and a leg rotatably supported by one end thereon in each of said openings, each of said legs having an end portion projecting into said torso, comprising a pair of pinions each having a shaft axially extending therefrom on at least one end thereof, means within said torso rotatably supporting said pinions in overlapping meshed relation with one another with their said shafts each disposed in a plane substantially transverse of the longitudinal axis of the torso and with their said shaft extensions oppositely directed, and each disposed opposite one of said leg-supporting openings, a rod secured intermediate its ends to each of said shaft extensions in substantially transverse relation to said shaft, and spaced elements on the projecting portion of each of said leg ends engaging the ends of said rods.

2. The walking mechanism of claim 1, wherein said means supporting said pinions comprises an axially extending shaft at the other end of each of said pinions and a U-shaped bracket having parallel spaced arms supported on said crotch, each of said arms disposed opposite one of said leg openings and having means for rotatably supporting a shaft extension of each of said pinions, with said pinions disposed between said arms.

3. The walking mechanism of claim 2, wherein said U-shaped bracket is supported on said crotch with the

arms thereof extending upwardly into said hollow torso portion.

4. The walking mechanism of claim 1, wherein said spaced elements engaging said rods each comprises a substantially U-shaped bracket secured by the web portion thereof to the inwardly-projecting end of one of said legs, said bracket having spaced, substantially parallel arms extending in a plane substantially normal to the longitudinal axis of said leg and each having a slot extending from its free edge inwardly thereof, said slot in each of said arms engaging over one end of one of said rods.

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