Jan. 31, 1967 R. GARDEL ETAL 3,300,892

WALKING DOLL OR THE LIKE

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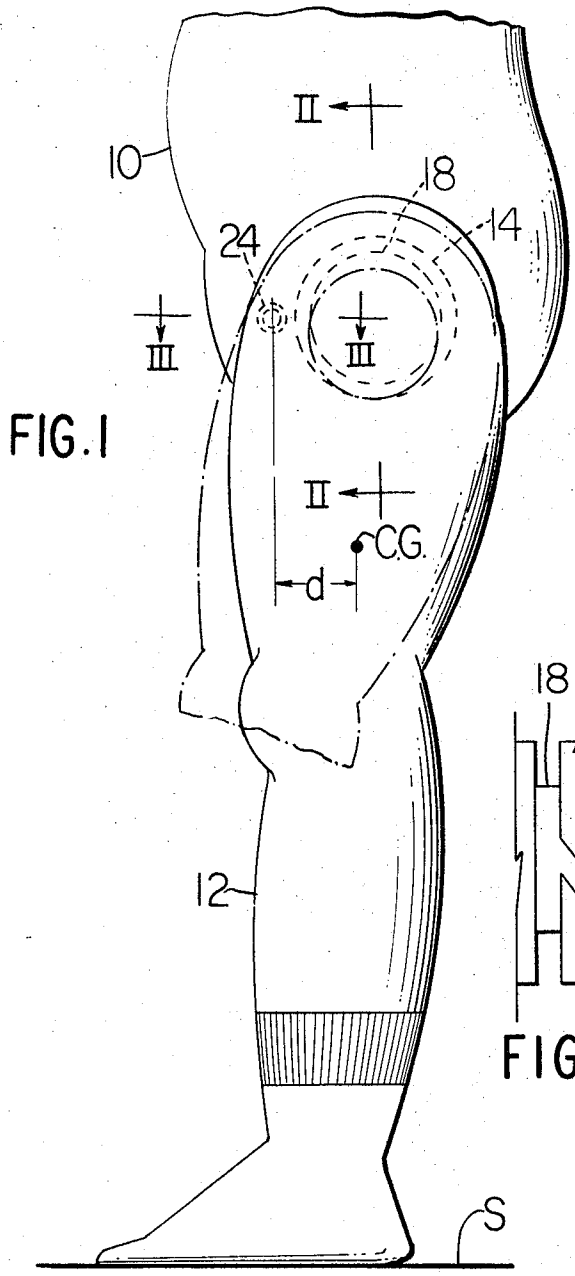


FIG. 1

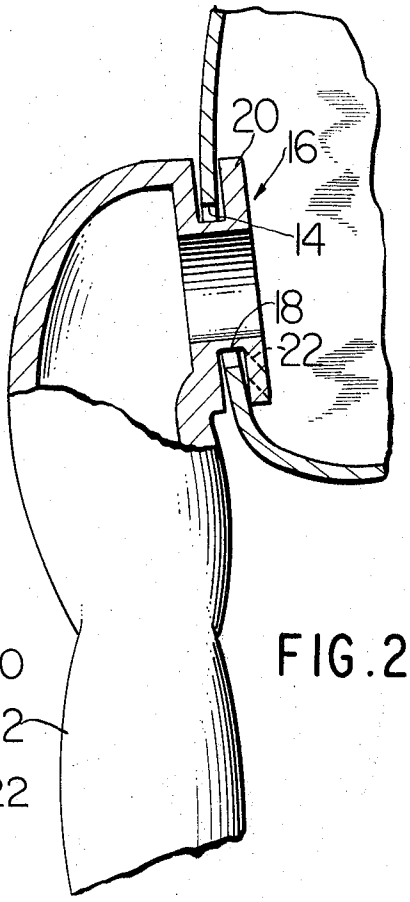


FIG. 2

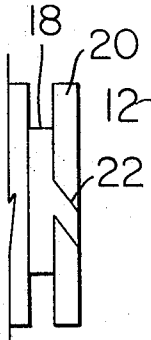


FIG. 2A

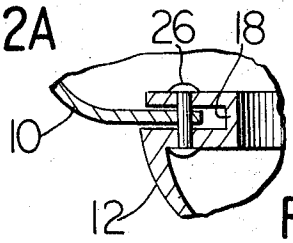


FIG. 3

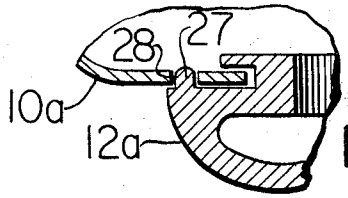


FIG. 4

INVENTORS
Robert Gardel
BY Egon Gorsky
Brig Durand
their ATTORNEYS

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WALKING DOLL OR THE LIKE

Robert Gardel, 11 Riverside Drive, New York, N.Y. 10023, and Egon Gorsky, 365 E. 46th St., Brooklyn, N.Y. 11220

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This invention relates to walking figures, particularly dolls, which utilize gravity to actuate the legs.

An object of the invention is to provide a simplified arrangement for actuating the legs of a doll or the like to cause the latter to walk.

Another object is to provide a walking doll or the like of a very simplified construction which does not require complicated or intricate mechanical mechanisms such as levers, gears, rods, frames and the like as heretofore employed for providing this animating function.

A further object is to provide an arrangement for actuating the legs of a doll or the like which utilizes gravity as the actuating force for moving the legs and which is readily adaptable for use in combination with other forces whereby gravity along with one or more mechanically applied forces may be employed to propel the legs.

A further object is to provide certain improvements in the form, construction, arrangement, and material of the several elements whereby the above named and other objects may efficiently be attained.

Practical embodiments of the invention are shown in the accompanying drawings wherein:

FIG. 1 is a partial elevational view of a doll constructed according to the invention.

FIG. 2 is a partial sectional view taken along the line II—II of FIG. 1.

FIG. 2A is a partial view of the doll's leg shown in a position rotated ninety degrees from that of FIG. 2 in order to show more clearly the insertion groove.

FIG. 3 is a partial sectional view taken along the line III—III of FIG. 1.

FIG. 4 is a partial sectional view taken along the same cutting plane as FG. 3, but showing an alternate construction.

Referring to the drawings, FIG. 1 shows the lower extremity of a doll body **10** along with legs **12** (only one shown) mounted thereon. The body **10** and legs **12** may be made hollow, as shown, from a suitable material such as plastic. Openings **14** (only one shown) at the sides in the lower extremity of the body **10** receive projections indicated generally at **16** (only one shown) on the leg **12** to mount the latter on the body **10**. The projection **16** has an annular groove **18** in which is received a portion of the doll body **10** adjacent the opening **14**. The inner part **20** of the projection **16** forms a rim or flange having a larger diameter than the opening **14** in the doll body while the smaller diameter of the groove **18** is less than that of the opening **14**.

In order to insert the projection **16** within the opening **14** to reside in the position shown in FIG. 2, an angled groove **22** may be provided on the inner part **20**. The groove **22** leads from the inner face of the projection **16** to the annular groove **18**. To insert the projection **16** into the opening **14**, a section of the inner peripheral edge of the doll body defining the opening **14** is flexed slightly to fit into the angled groove **22**. The leg is then rotated, said peripheral edge being carried in the angled groove **22** until said peripheral edge is carried into the annular groove **18**. Thus, in effect, the leg is "threaded" into position, that is, into the assembled position shown in FIG. 2 where the inner peripheral edge of the doll body forming opening **14** is accommodated in groove **18**, the

latter serving to hold the leg on the body. Thus the angled groove **22** is used only for inserting the projection **16** into and removing it from the opening **14**. Alternatively, the materials used for the body **10** and leg **12** may be made sufficiently flexible so that the projection **16** may be forcibly inserted as the materials flex.

The groove **18** in the projection **16** is slightly wider than the thickness of the body accommodated in the groove **18** so that the leg is free to rotate. Also, since the opening **14** is of larger diameter than that of the smaller diameter of the annular groove **18**, the leg **12** and its projection **16** are free for limited movement relative to the body, i.e. the leg is free for limited movement in any direction transverse to the center line of opening **14** in the body.

In order to provide for gravity actuation of the legs, a pivotal support or connection **24** is provided between the body and legs at an offset position. As shown in FIG. 1, the pivotal connection **24** is located at a frontal position of the leg and is forward of the center line of the opening **14** in the doll body and also forward of the center of gravity of the leg when the latter is supporting the body in a normal upright position as represented by the solid lines in FIG. 1. Thus it will be seen in FIG. 1 that the pivotal connection **24** is forward of the center of gravity (C.G.) of the leg **12** by the distance *d*. It will be readily apparent, therefore, that when the body **10** is tilted or rocked to one side so that the weight is placed on one leg and the other is lifted off the ground or surface S, the latter leg will swing forward due to its own weight as the center of gravity of the leg tends to move to a position underlying the pivotal connection **24**. Thus the leg **12** will swing from the solid line to the broken line position shown in FIG. 1, and by tilting or rocking the body from side to side, the two legs will alternately swing forward due to their own weight to simulate walking. As previously described, the leg with its projection **16** is free for limited transverse movement in any direction relative to the center line of the opening **14**. The pivot connection **24**, however, limits the leg to an arcuate or swinging movement about the axis of pivot connection **24**. The groove **18** receiving portions of the body adjacent the opening **14** serves to guide the leg during such swinging movement. The limits of this swinging movement of the leg about connection **24** are, of course, determined by the difference between the diameter of the opening **14** and the smaller diameter of the groove **18**.

The pivotal connection **24** between the legs and body may be made by a rivet **26** (FIG. 3) extending through suitable aligned openings in the leg and body and adapted to rotate in said aligned openings. Alternatively, the leg **12***a* may be provided with an integral projection **27** received within an opening **28** in the doll body **10***a* as shown in FIG. 4. This latter arrangement is such that the projection **27** may be disengaged from the opening **28** to permit the leg **12***a* to be swung to any desired position, e.g. ninety degrees forward to a sitting position. It will be understood that the projection **26** is disposed in the opening **28** whenever the doll is walked and is disengaged, as desired, by the user. The projection may be disengaged merely by forcibly rotating the leg **12***a* relative to the body **10***a* so that the portion of the body and leg adjacent the opening **28** and projection **27** flex to permit the projection to ride out of the opening and thereafter bear against the outside surface of the doll body as the leg is swung to a sitting or other position. In rotating the leg from a sitting to an erect position, the projection **27** will snap into the opening **28** as soon as the two come into alignment. The projection **27** will not normally disengage itself from the opening unless it is desired to force it out manually as described.

From the above description, it will be seen that the doll may be walked merely by tilting or rocking the body. Thus, a child may grasp the hand (not shown) or other part of the doll to rock the latter from side to side to walk it.

It will be observed that the construction does not require any complicated mechanism and further that it leaves a great deal of unused space within the body and leg adjacent the body-leg connection, thereby making the construction readily adaptable to receive mechanisms, as may be desired, to cause or assist in causing the body to rock from side to side.

It will be understood that various changes may be made in the form, construction and arrangement of the several parts without departing from the spirit and scope of the invention, and hence we do not intend to be limited to the details shown or described herein except as the same are included in the claims or may be required by disclosures of the prior art.

What we claim is:

1. A doll or the like having legs mounted on a body, pivot connection means between each leg and the body disposed forward of the center of gravity of the legs when the latter are upright and are supporting the body in an erect position, said pivotal connection means providing independent free suspension for each leg whereby upon being free of a supporting surface, the legs are gravity actuated to freely swing forwardly of the erect body, and means limiting the swinging movement of the legs whereby simulated walking may be achieved on a flat surface by rocking the body from side-to-side to alternately free each leg of said flat surface, said limiting means comprising a projection on each leg received at least partly within an opening in the body, said projection having a peripheral groove bounded by a rim or flange, said groove having an inner diameter less than the diameter of said body opening and said rim or flange having means comprising a diameter sufficiently large so that at least portions of the body adjacent the body opening are accommodated in the groove, whereby said portions of the body and said groove cooperate to guide and limit arcuate swinging motion of the projection as the leg pivots about said pivot connection.

2. A doll or the like according to claim **1** wherein said projection has a second groove in its peripheral face intersecting said first groove at an acute angle and adapted to receive and pass a peripheral edge portion of the doll body adjacent said body opening to facilitate insertion and assembly of said projection within the body opening.

3. A doll or the like according to claim **1** wherein said pivot connection means comprises a projecting element extending between and providing relative motion between the leg and the doll body.

4. A doll or the like according to claim **3** wherein the doll body and legs are made of material having a resiliency permitting flection thereof to allow the projecting element to disengage the pivot connection means when the leg is forcibly rotated.

5. A doll or the like according to claim **3** wherein the projecting element extends axially relatively to said body opening, said projecting element pivotally supporting a section of the body adjacent said body opening within said groove.

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RICHARD C. PINKHAM, *Primary Examiner.*

L. J. BOVASSO, *Assistant Examiner.*